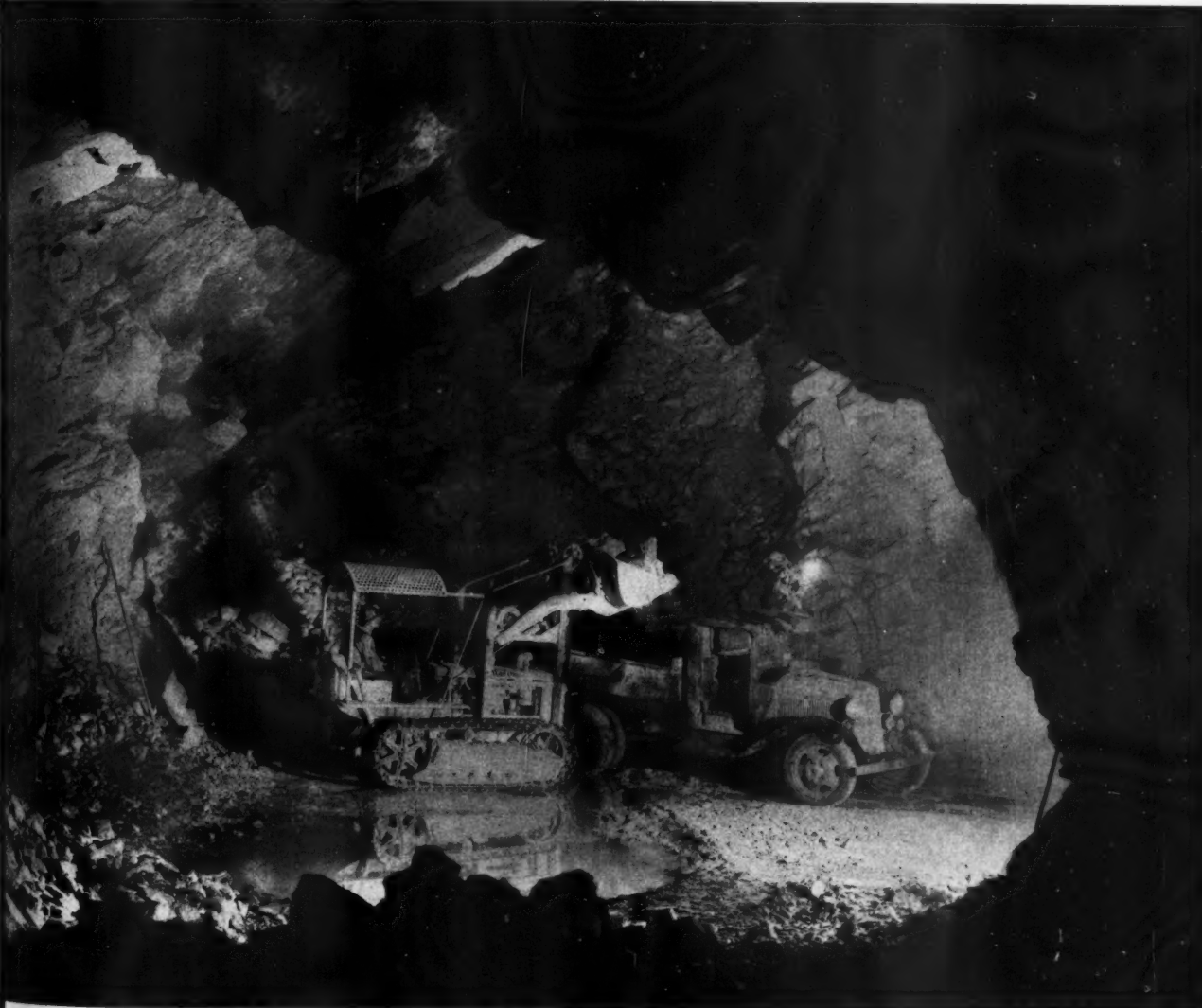


Mining

CONGRESS JOURNAL



NOVEMBER
1945





how to keep **OLD** motors **YOUNG**



Why more Westinghouse **SK Motors** are used in coal mines today than all other makes combined

One-piece rolled steel frame—with drop-forged steel feet welded to frame, gives great mechanical strength.

Separate coil units—shunt, series and commutating coils are wound and insulated as separate units, simplifying replacement.

Sealed-sleeve bearings—with exclusive Westinghouse vestibule seal, keep oil inside, keep dust and dirt outside.

Form-wound armature coils—on larger sizes are insulated with specially selected mica on slot portion and dipped and baked in long life varnish. Smaller sizes have mush-wound coils.

Readily accessible brushes—easily adjusted or removed. Any one brushholder can be removed without disturbing others.

Field coils—wound on a one-piece Micarta shell with end washers punched to exact size, protecting the coil against dirt and moisture.

Commutators—made of punched hard drawn copper for uniformity, better commutation and longer brush life.

Whether it's 10 years old... or 20... or even if it's one of the first SK Motors ever installed back in 1911, the same replacement armature will fit. This is true also of armature coils, field coils and sealed-sleeve bearings—to keep older models always modern in performance.

This is true of SK Motors because the basic construction has always been kept the same, and because all improved parts have been designed to fit former models of the same rating and frame size. To the user, this means greatly simplified maintenance and the smallest of parts stocks.

Furthermore, SK Motors have been unsurpassed in dependability and economical service throughout the 34 years that they have been a coal industry standard. For further information, see your Westinghouse representative, or write to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania. J-21361

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PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE



SK MINING MOTORS

Mining

CONGRESS JOURNAL

VOLUME 31, NUMBER 11

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FOR NOVEMBER 1945

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FRONT COVER: Front-end type shovel loads limestone into trucks in underground quarry near Hershey, Pa..
Caterpillar Photo

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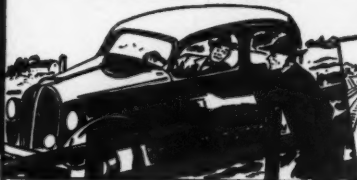


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DOCTORS ARE
UNABLE TO REACH THOUSANDS
OF FAMILIES QUICKLY

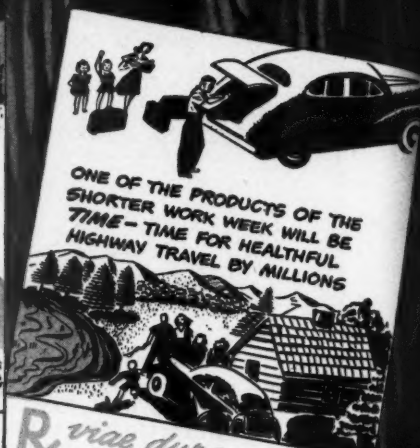


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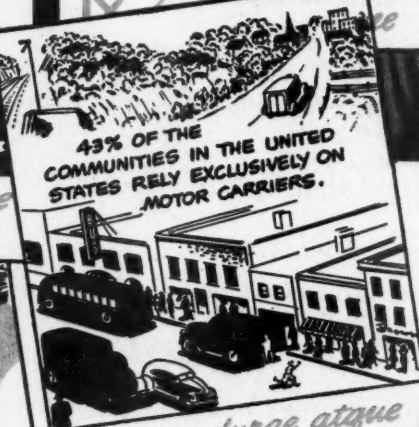
EVERYTHING
WE EAT AT SOME TIME OR
OTHER MUST TRAVEL
A ROAD OR HIGHWAY

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bonae sine fine*



ONE OF THE PRODUCTS OF THE
SHORTER WORK WEEK WILL BE
TIME - TIME FOR HEALTHFUL
HIGHWAY TRAVEL BY MILLIONS

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43% OF THE
COMMUNITIES IN THE UNITED
STATES RELY EXCLUSIVELY ON
MOTOR CARRIERS.

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THE SOCIAL
AND RELIGIOUS LIFE OF THOUSANDS
AND THOUSANDS OF FAMILIES IS
STIFLED BY SECONDARY ROADS
THAT ARE IMPASSABLE MUCH OF
THE TIME.

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POSTWAR CARS ARE ALREADY
COMING OFF PRODUCTION LINES.
HIGHWAYS AND STREETS MUST BE
BUILT SPEEDILY TO AVOID
CONGESTION


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ANTIQUATED HIGHWAYS CRIPPLE
AND KILL THOUSANDS YEARLY.




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OFTEN UNUSABLE LINKS IN
OTHERWISE ADEQUATE ROADS.




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AS MUCH AS 91% OF EVERY
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AND STREETS IS ULTIMATELY PAID
OUT AS WAGES AND
SALARIES.




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BENEFIT THE HEALTH AND
WEALTH OF OUR COUNTRY AND CITY
FOLKS AS WILL FREE, SPEEDY AND
SAFE ACCESS TO EACH OTHER VIA
GOOD HIGHWAYS.



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FEW CARS AND
TRUCKS SERVE THE FULL
LIVES OF WHICH THEY WILL
BE CAPABLE WHEN ALL ROADS
ARE HARD AND GOOD.



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MILLIONS OF
MEN BESIDES SERVICE STATION
ATTENDANTS DEPEND UPON
HARD AND GOOD HIGHWAYS TO
GIVE THEM A LIVELIHOOD.



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bonae sine fine*

THE DOCTOR HAS PRESCRIBED...

* HARD AND GOOD ROADS WITHOUT END

Not only has the doctor written this prescription—he has earmarked funds to pay half the cost of a 3 year course of medicine.

The other half (1½ billion dollars) must be raised by 48 patients. The will to get well of a majority of them is at a low ebb. Only 7 states have sufficient plans for the first year of the program. Plans for highway projects ready to let amount to less than half the medicine apportioned by the doctor for the first year to say nothing of the other 2½ years.

A lot of nursing is yet necessary. If a large highway construction program is to be gotten under way in 1946, then everyone in the industry and profession must turn nurse and help the doctor coax the patients to take their medicine. Otherwise, men will go unemployed, traffic will snarl and the next dose of medicine will be plenty bitter for lovers of the American way of life to take.

UNION WIRE ROPE CORPORATION, 2144 Manchester Ave., Kansas City 3, Mo.

- ☐ Send a Free copy of book entitled "The Road Ahead"
☐ Send a Free copy of book entitled "Put Your Town on the Air Map"

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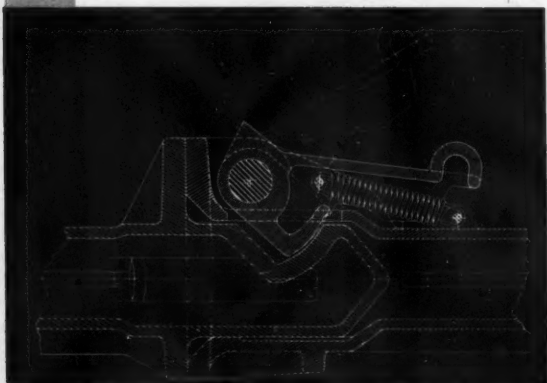


POSITIVE INTERLOCK



"Enclosed Pocket" of O-B Automatic Mine Car Coupler Keeps Coupler Heads in Full Engagement Under All Conditions

- **Eliminates Vertical Intercoupler Movement**
- **Permits Operation on All Normal Grades**
- **Allows Full Pulling or Pushing Capacity**
- **Prevents Disengagement in Case of Derailment**



There's no chance of intercoupler movement or accidental disengagement with O-B's male-and-female type coupler heads. Movable cam on female head fits snugly into corresponding notch in male head, holding it securely within enclosed pocket. Bearing faces of cam and notch are identical arcs, concentric with respect to each other but excentric with respect to center of cam pin. This forces cam to pull into the notch. The more tension between coupler heads, the more tightly cam presses into notch, insuring positive interlock. A small spring is provided to snap cam into notch quickly upon engagement.

INSTALL O-B AUTOMATIC MINE CAR COUPLERS

The Couplers Designed Specifically To Meet Mine Operating Conditions

2564 AM



Ohio Brass



MANSFIELD, OHIO

CANADIAN OHIO BRASS COMPANY LIMITED, NIAGARA FALLS, ONTARIO

BATTERY-POWERED Shuttle Cars



**Give Most
Flexible
Operation**



**... ALKALINE BATTERIES
give most trouble-free power**

Because they carry their own power supply, battery-operated shuttle cars have high operating flexibility. They require no external power connections to jeopardize safety, require maintenance, or delay production while being connected or disconnected and during the roundabout maneuvering often necessary to avoid running over them. Because they have a minimum of moving parts, they are easiest to keep in working order.

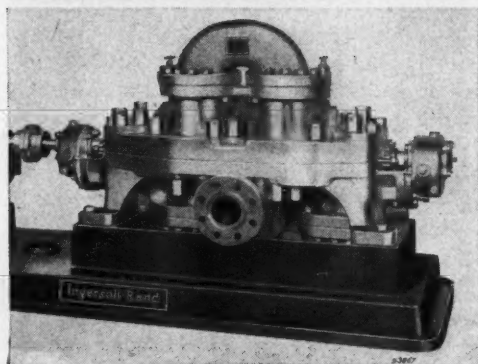
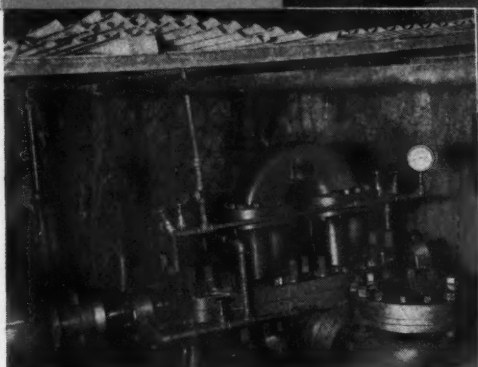
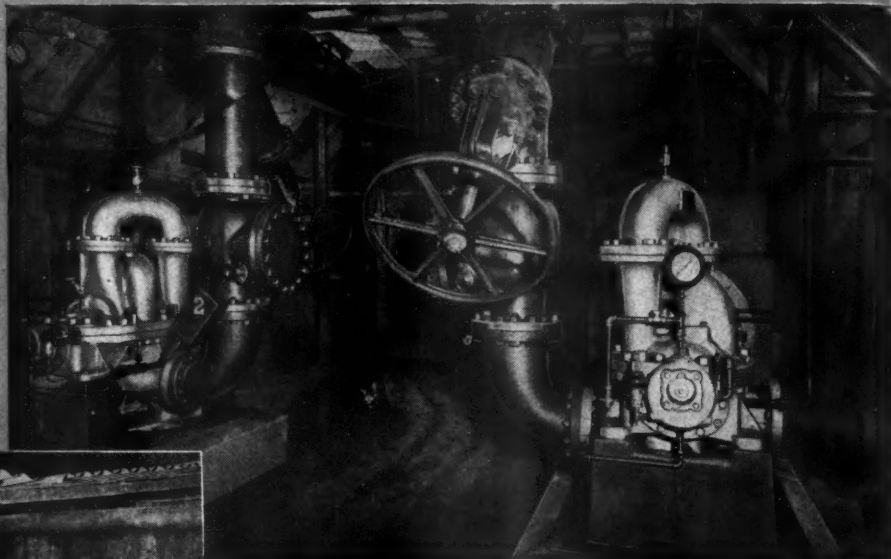
With batteries exchanged between shifts, a shuttle car is kept continuously supplied with power. While one battery operates the car, the other is charged. Not only does the car make efficient use of power but the current for battery charging is low-cost power because charging can usually be done during off-peak hours. In that case, a substantial reduction in maximum power demand is also effected.

Altogether, the superior flexibility, higher availability, and overall operating and maintenance economy of the battery-powered shuttle car make it an inherently dependable and efficient haulage unit—especially when powered by Edison Alkaline Batteries. With steel cell construction, an alkaline electrolyte that is a preservative of steel, and a fool-proof electrochemical principle of operation, they are the most durable, the longest-lived and most trouble-free of all mine-haulage batteries. Edison Storage Battery Division of Thomas A. Edison, Incorporated, West Orange, N. J. In Canada: International Equipment Co., Ltd., Montreal and Toronto.

Edison

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Cut MINE PUMPING COSTS



10%—20%—30%—these are the savings in pumping costs recently accomplished by new Ingersoll-Rand pumping plants in a number of large mines.

Such savings are no miracle—simply a combination of good engineering and superb mine pumps. In most large mines, the pumping system has “grown like Topsy”. The result is a multitude of pumps, often small and inefficient. In a number of cases I-R engineers have been able to install a large pump or several pumps to replace a number of old, inefficient units.

The I-R Class RT station pump is ideal for such jobs. Big and husky, highly efficient and, above all, dependable, it does a good job because the men who designed it know the kind of service a mine pump must give. The I-R engineer in a nearby branch office would be glad to give you complete information. Ingersoll-Rand Company, Cameron Pump Division, 11 Broadway, New York 4, N. Y.



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[Page 6]



*The green color identifies I.P.S.
The all-green rope guarantees
highest character because it
signifies TRU-LAY Preformed of
Improved Plow Steel.*

YES—GREEN IDENTIFIES... GUARANTEES CHARACTER, TOO

●TRU-LAY was the original preformed rope. Its I.P.S. grade was identified by one green strand. Now the whole rope becomes green for the superior new green lubricant is literally "stuffed" into every strand to identify and protect this highest grade rope. There is nothing better nor longer wearing than TRU-LAY Pre-formed Improved Plow Steel—the all-green rope. Make certain your next wire rope is TRU-LAY all-green.



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water is c
board a T
gathers i
lifted 27
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sprays a
is loaded

Doing th
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INDEPE

New York



JOB IN COAL MINE

1-Keeps Haulage Way Dry

2-Furnishes Water For Spraying

In this busy Pennsylvania coal mine seepage water is dammed by a sluice board. 10 feet behind the board a Thor Pneumatic Sump Pump is set up. As water gathers it is pumped 180 feet through a bore hole and lifted 27 ft. to a large tank. A second Thor Sump Pump in this tank forces the water to a spraying system which sprays all the coal mined from 12 chambers before it is loaded.

Doing this double job efficiently, Thor Sump Pumps are effecting substantial savings in operating costs. Air-powered, they cannot cause explosions . . . light and compact, they are easily moved to any location. In addition, special Thor features of positive, continuous lubrication and automatic speed control keeps these pumps on the job day after day with a minimum of attention and maintenance.

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Self-priming, Thor Sump Pumps operate efficiently in dirty water, oil, sludge or sewage either partially or fully submerged. Feature by feature they are made to handle the toughest jobs. Get full facts from Thor Catalog No. 42A. Write for your copy today.

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This safety testing gives you cords and cables that stand up under the rigors of mining jobs that demand never-failing ruggedness. Specify U. S. Royal.

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WHERE AND WHEN YOU NEED IT!

Tough mining operations which require an abundant and constant supply of compressed air, always proceed according to schedule where Timken Bearing Equipped compressors are used.

The photograph shows a "Timken Bearing Equipped" Ingersoll-Rand Type 40, 50 h.p. compressor installed at an Idaho mining property to equalize the low points in the curve of pressure in certain parts of the mine.

Timken Bearings are used on the crankshaft of this model—as they are in many Ingersoll-Rand compressors—to promote maximum smoothness of operation, to prevent crankshaft wear, to protect the crankshaft against radial, thrust and combined loads and to hold it in correct alignment. As a result, lubrication is simplified, endurance is increased, compressor life is prolonged and maintenance costs are greatly reduced.

No other bearing provides the complete anti-friction protection that is inherent in Timken

Bearings and that's why they are used extensively throughout the entire mining industry. You can rest assured that years of profitable, trouble-free performance will be yours if the trade-mark "TIMKEN" is on every bearing you use!

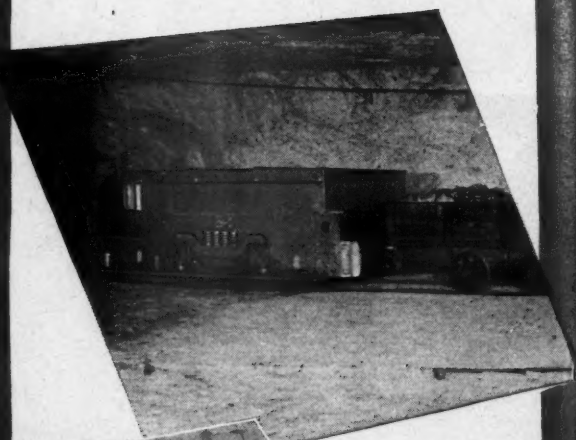
**THE TIMKEN ROLLER BEARING
COMPANY, CANTON 6, OHIO**

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS

KATHANODE BATTERIES

*Cut Charging
Costs in...*

**MINE LOCOMOTIVE AND
SHUTTLE CAR OPERATION**



Underground charging station
for mine shuttle car batteries

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Kathanode's high charging efficiency is due to its special negative plate. This has a negative active material of unusually high density. It is less inclined to permanent sulfation and therefore requires less current in the conversion from sponge lead to lead sulphate.

In mine locomotive and shuttle car service this more efficient utilization of charged current means lower charging costs and ability to handle heavy loads right up to the end of each shift. Kathanode batteries will do this through their entire service life.

Write Dept. 1211 for Gould Glassklad Battery Catalogs: 200 for Mine Locomotive Service and 300 for Mine Shuttle Car Service.



***fast, low-cost
drilling in
every seam and
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SETTING new records in speed, economy and low maintenance, CP Post-Mounted and Hand-Held Coal Drills comprise the world's largest line of electric coal drills! The four CP Post-Mounted models assure wide flexibility. To meet specific requirements complete drill assemblies are supplied with desired combination of motor, hookup, post, clutch, boxing, thread bar, auger and cutter.

The five CP Hand-Held Electric Coal Drills include the CP No. 572, illustrated.

For full data on CP Post-Mounted Coal Drills, write for Catalog 901—on CP Hand-Held models, write now for Catalog 902.

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"Fewer derailments now"

"Track stays truer to gage"

"More coal moved per day"

"Faster, safer haulage"

Before you buy any Bethlehem steel ties, you may want to know what other mining men are saying about them. We've heard plenty of comments, but the four quoted above are probably the most typical. They're the "reason why" behind so many repeat orders.

Bethlehem ties are made in numerous sizes, ranging from light and medium weights to the heavy-duty 6's and 9's. You'll like these bigger fellows where speeds are high and where track takes a lot of pounding from heavy equipment.

The No. 6, for instance (weighing 6 lbs. per ft.), is widely used in entries, headings, and secondary haulage track. The No. 9 (weighing 9 lbs. per ft.) is recommended for main-haulage track underground where heavy locomotives and large-capacity cars are used; also for narrow-gage main-line track in open-pit mines.

These ties maintain gage and protect switches even when interspersed with every three or four wood ties. Here they are silent watchmen on 24-hour duty . . . keeping the track in running condition till rotted-out wood ties have been detected and replaced.

Whether you use riveted clips or bolted clips, installation is child's play. You can put your greenest man to work with 6's or 9's. He'll have them installed in a jiffy. Then watch your haulage costs drop!

Ask for Booklet 188. It tells you more about these rugged steel ties—where to use them and how they simplify your haulage problems. Many pictures of installations and structural features. Write to Bethlehem Steel Co., Bethlehem, Pa., for your free copy.



POWER



EXIDE-IRONCLADS KEEP LOCOMOTIVES PULLING STEADILY AND STRONG...

In mines where locomotives are Exide-powered, coal moves steadily along the main line right up to the end of every shift. For Exide power is sustained power... power that is equal to every demand made upon it. You can be certain of "full shift availability" hour after hour, day after day. This is the main reason why more mine operators use Exide-Ironclads than all other batteries combined.

You can always count on Exide-Ironclads for safety and dependability. Their rugged construction keeps maintenance costs at practically nothing. *These characteristics of Exide-Ironclad Batteries add up to lower haulage costs per ton.*

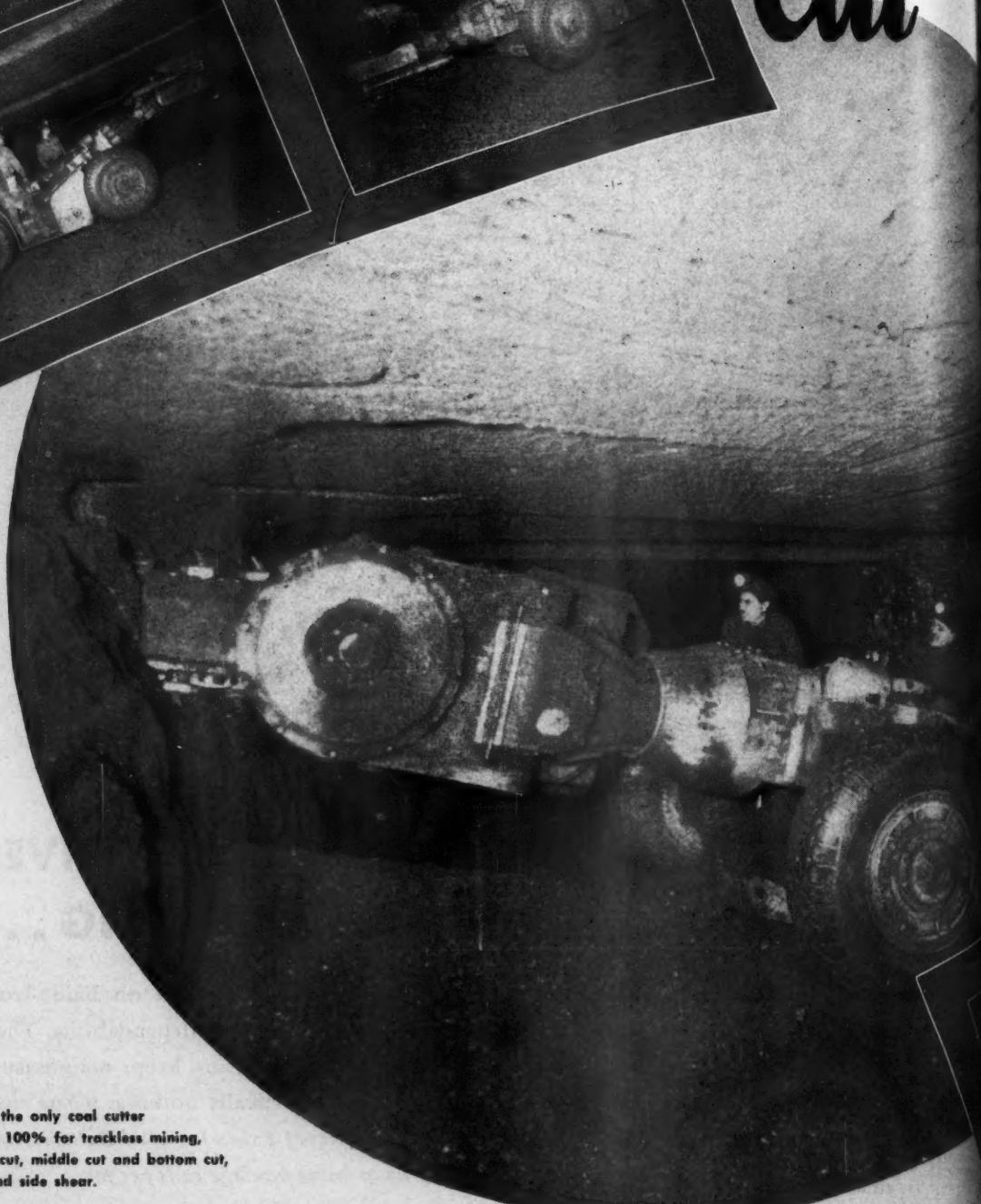
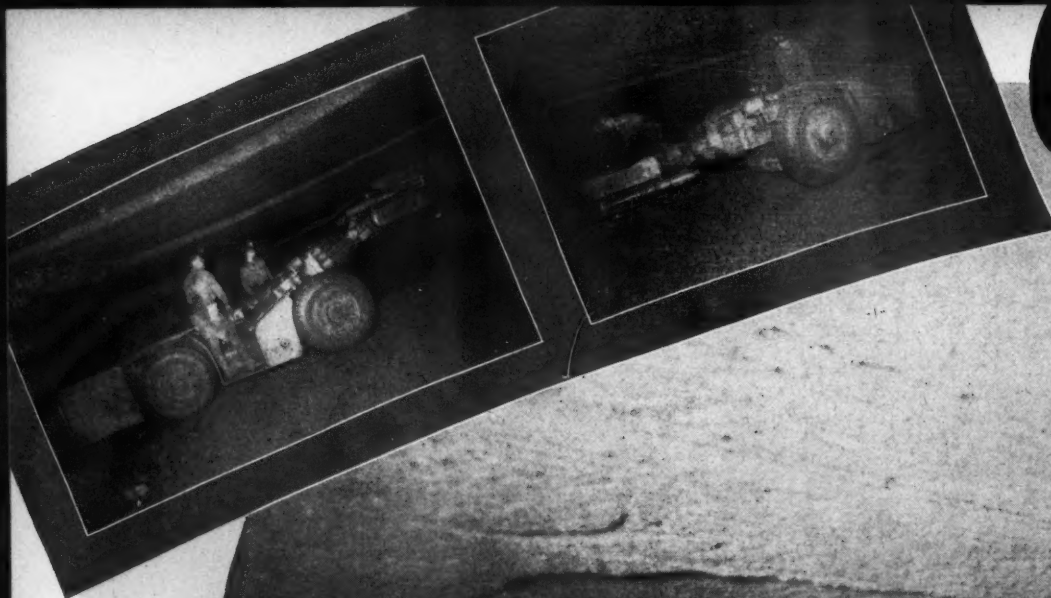
If you have a special battery problem, or wish more detailed information, write to Exide and ask for booklet Form 1982.

Exide
IRONCLAD
BATTERIES

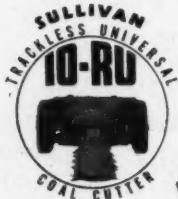
THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32 • Exide Batteries of Canada, Limited, Toronto

Cut

up



10-RU — the only coal cutter
designed 100% for trackless mining,
will top cut, middle cut and bottom cut,
center and side shear.



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For the answer to their cutting problems, resulting from the higher tonnage obtained in trackless mining, more and more mines are turning to the Sullivan rubber-tired 10-RU Trackless Coal Cutter • The Universal-type 10-RU more than matches the capacity of existing loading machines and gives you the results required to keep your loader operating at top efficiency • Hydraulic drive motors, hydraulic steering, short wheel base, large pneumatic tires, 4-wheel mounting and floating rear axle ensure faster tramming under all mine conditions. Hydraulic controls for all operations result in fast, safe and easy positioning of boom and bar at all times • Your local Sullivan engineer will gladly give you the complete story or show you the 10-RU in action. Ask for bulletin C-33 • SULLIVAN MACHINERY COMPANY. General Offices: Michigan City, Ind. In Canada: Canadian Sullivan Machinery Company, Ltd., Dundas, Ont.



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Coal Mining Machines
Slushers - Rock Loaders
Portable Hoists - Car Pullers
Room Hoists - Coal Drills
Air Compressors - Rock Drills
Cutter Bit Sharpeners
and Heaters
Core Drills and Contract
Core Drilling

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THE ANSWER to Labor Shortage is MORE MECHANIZATION!

IN 1944—with approximately 40,000 less men than it employed in 1940—the coal industry had increased production by more than 150 million tons. Some highly mechanized mines increased their output by as much as 30%.

Mechanization not only maintains production and lowers costs, but—mechanization *above ground* produces the *clean* coals of low impurity content, correct sizing and uniformity that win the better markets—the higher prices.

Morrow Tipples *streamline* production from the mine, through modern preparation equipment, to cars and barges in shorter time, at lower costs—in best condition to **SELL!**

That's why a high percentage of all mechanized mines are Morrow equipped.

* * *

Morrow engineers are available now and ready to work with you. Ask Morrow to assign an engineer to study your situation. Write The Morrow Manufacturing Company, 1984 Ford Blvd., Wellston, Ohio. Division The Wacker Corporation.

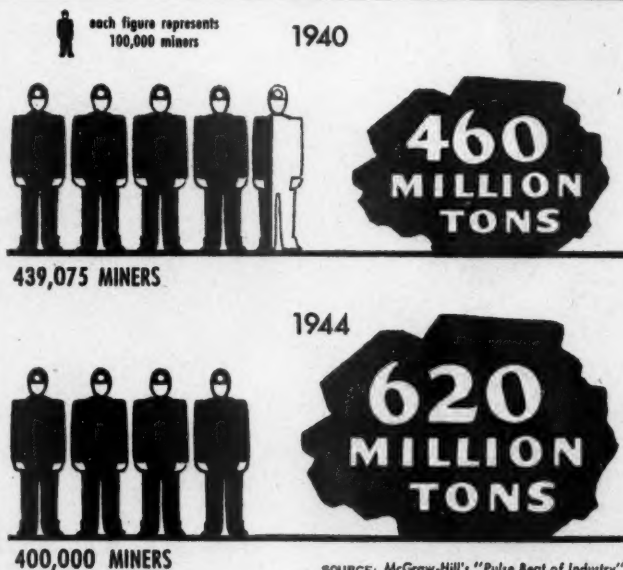
Better Preparation
= **INCREASED SALES!**

1. low impurity content
2. correct sizing
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MECHANIZE WITH
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COAL WASHERS • WEIGH PANS • FEEDERS • DUMPS
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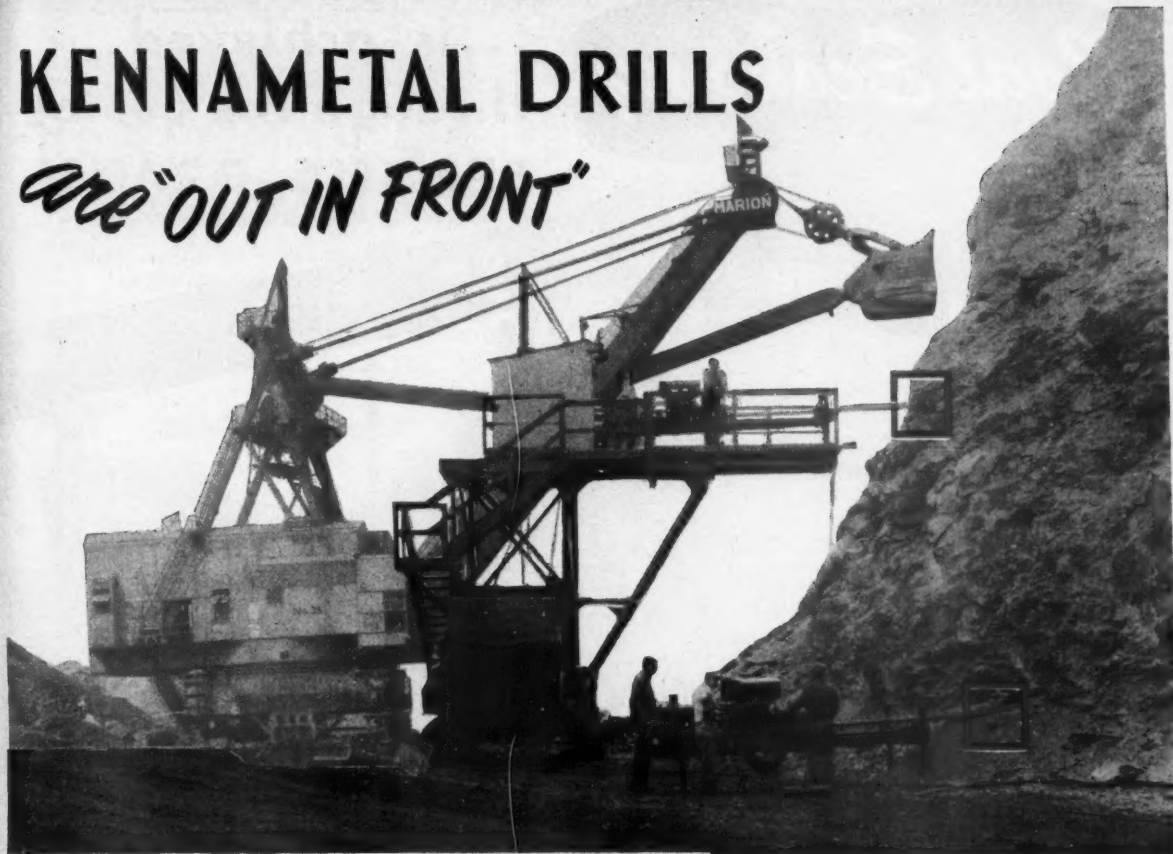
MANPOWER AND COAL PRODUCTION • 1940 and 1944



SOURCE: McGraw-Hill's "Pulse Beat of Industry"

KENNAMETAL DRILLS

are "OUT IN FRONT"



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If it's a Kennametal Drill, results are outstanding—more holes, faster, better, cheaper.

You pay less for Kennametal-drilled holes, in time, in man-hours, in power, in bit replacement and resharpener.

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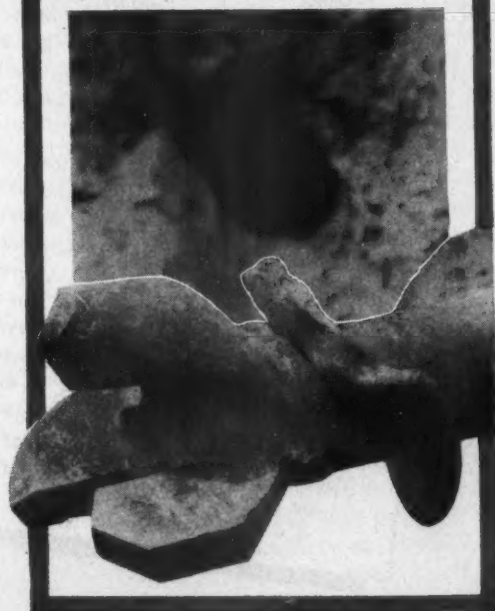
● These bits are revolutionary in type and design. They are tipped with Kennametal, the same hard, tough, durable cemented carbide that for years has produced outstanding results when used on metal-working tools.

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Photograph above shows excellent condition of Kennametal Rotary Drill Bit after being used for one month, drilling holes in customary Seam 8 overburden.



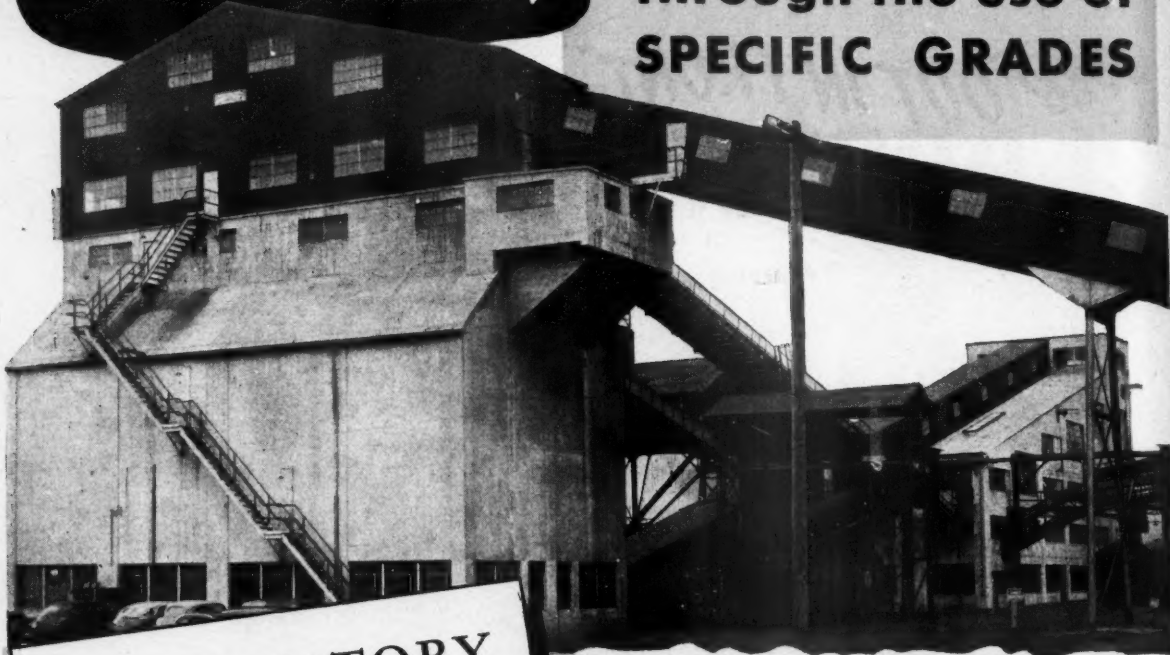
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Coal Economy

...is achieved
through the use of
SPECIFIC GRADES



CASE HISTORY

Crucible Fuel Division, Crucible Steel Company of America, Crucible, Pennsylvania, uses two 48" R & S Hydro-Separators, two 7' and one 16' R & S Hydrotators to produce processed coal for metallurgical use at the rate of 400 tons per hour.

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Hydrotators—and Stump Air Flow cleaners are designed for better processing to meet these consumer demands. R & S descriptive bulletins should help you. We will be glad to send them to you upon request. Bulletin No. 161—R & S Tandem Hydro Separator; Bulletin No. 162—R & S Hydrotator; Bulletin No. 163—R & S Stump Air-Flow Cleaner.



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Mining

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Strikes Must Be Stopped!

A MERICAN labor problems have reached a state bordering on chaos. Striking unions everywhere show an utter disregard for the urgent need of the Nation to launch its peace-time pursuits. Shortages of all kinds, amounting to actual want in many lines, make no impression upon labor leaders *who are out to get all they can while the getting is good!*

Decisions of labor boards (albeit set up *in behalf of labor*) are freely flouted by labor without punishment whenever adverse judgment is encountered. We witness too, many examples of wanton violation of contracts—evidencing labor's general supposition that its current concentration of power is unstoppable.

Labor and management are now in conference in Washington. The expressed hope is that their deliberations can bring much needed order into the production world, through better understanding and agreement on machinery for peaceful settlement of disputes. Concurrence is not anticipated on such tough propositions as wage policy, compulsory arbitration, closed shop or union maintenance. But voluntary arbitration, mediation, bargaining agreements, and possibly even jurisdictional disputes may find workable solutions.

The conference is expected to establish policies without resort to extensive new legislation. Specifically this implies labor-management cooperation against all forms of strikes of whatever cause.

Strikes at such a moment as this, in utter disregard of the public interest, must be stopped. If industrial strife continues, Congress in the discharge of its duty must try its own hand in bringing order out of chaos.

Are we to be forced to the conclusion that work stoppages are unavoidable unless and until labor unions are required by law (with-

out quibble or subversive activities) to acknowledge and accept their individual and collective responsibilities to the American people? The one-sided character of existing labor legislation, together with its failure to make clear *management's right to manage*, has long been recognized. The sooner these defects are corrected, the better are the chances for industrial peace.

Labor, through years of overly-benevolent legislation, now possesses more power than is good for it. The unwise use of that power (as now being demonstrated) can quickly destroy its very source. Strikes have become insidious weapons to force the will of the minority. As such they are *un-American and must be stopped!*

Control Atomic Energy Materials!

PRESIDENTIAL action, following the entrance of atomic energy upon the military and economic scene, implies governmental control of all lands and mineral deposits from which atomic energy materials can be obtained. The urgency of the moment perhaps explains such a move but clarification is wanted at once lest future mineral prospecting become hopelessly impaired.

In the first place most common rocks are radioactive in some degree. Surely this does not mean we will prohibit mineral locations on most of our public lands! The limits, therefore, need definition.

Any threat to the freest possible entrance upon public lands for the purpose of finding ore deposits is a threat to the fullest development of the Nation's mineral resources. We have repeatedly pointed out that an extension of the leasing system, with all its bureaucratic controls, to all types of minerals on the public domain would tend to stifle productive enterprise.

The free-prospecting system to which we attribute our presently known mineral wealth is still the best servant we have to safeguard and develop our mineral resources. If we are going to have people look for atomic energy materials, we had better keep our mining laws intact so that *these substances will be looked for instead of avoided*. Incentive rather than restriction will help us develop reserves of uranium and related substances.

We see that the current order can do a lot of harm. As it is already a source of deep concern among mining men, let's have it straightened out at the earliest possible moment.



The Piquette mine is one of the largest shippers of hand sorted ore in the district

Vinegar Hill Zinc

By G. H. PETT

Professor of Mining
Wisconsin Institute of Technology
Platteville, Wis.

500-Ton Plant in the S. W. Wisconsin Zinc District Produces Zinc and Lead Flotation Concentrates and Commercial Sulphuric Acid from Ores Mined Within a Radius of Thirty Miles

IN 1905, the Vinegar Hill Zinc Company began operations in Vinegar Hill Township, in Jo Davies County, near Galena, Ill., naming the company after the township. How the township derived the name could be traced to a community on the Southeast coast of Ireland called Vinegar Hill, since the early settlers were mostly Irish, but the old timers prefer the following story:

Two men were sent to get a barrel of whiskey and a jug of vinegar. After arriving at Galena, they got their orders mixed, having had a few drinks too many. As a result they returned with a jug of whiskey and a barrel of vinegar. Since the settlement was near the top of a hill, and small at that, there was vinegar for some time to come; therefore, the name Vinegar Hill.

Plant on Site Near Cuba City

All processing operations are carried out on a 50 acre site located 1 mile southeast of Cuba City, Wis., on which is located the sulphuric acid plant, and the custom mill. The latter consists of three units, the crushing, jig mill, and flotation plants. The four plants, together with their aux-

iliaries, embrace an approximate total of 30 buildings.

The site is centrally located for all ore shippers, not only for the southwest Wisconsin zinc district, but also for northwestern Illinois.

500 Tons Rough Concentrates Treated Per Day

An average of 550 tons of hand sorted mine ore and rough milled concentrates are purchased daily. Of this, approximately 500 tons are processed each day in the jig and flotation mill, while the remaining excess tons are

stockpiled. The stockpile, as of August 31, 1945, amounted to 100,000 tons, of which 96,500 tons is owned by Metals Reserve Corporation.

From the raw material processed daily, an average of 5 tons of 75 per cent lead concentrate, 75 tons of 62 per cent zinc concentrate, and 45 tons of iron sulphide concentrates, containing 47 per cent sulphur, are produced.

The lead and zinc concentrates are shipped to smelters in Illinois while the iron sulphide concentrates are flash roasted to SO_2 gas in the acid



The Other Version

Two miners from a settlement near Galena were sent, one Saturday evening, to get some vinegar and whiskey. In loading the barrel of vinegar on the wagon, it sprung a leak, unnoticed by the miners, and in climbing a long hill just before reaching the settlement, numerous stops were made in order to imbibe freely from the jug of whiskey, resulting in several small pools of vinegar left behind. Arriving at the settlement, there was no vinegar and no whiskey, but for some time after, the atmosphere on this hill was permeated with the odor of sweet essence of vinegar, thus the name, Vinegar Hill.

plant, which gas is converted to 42 tons of SO_3 gas, and this, in turn, produces about 1,500 tons of 66 degree B  sulphuric acid per month.

Nature and Source of Raw Material

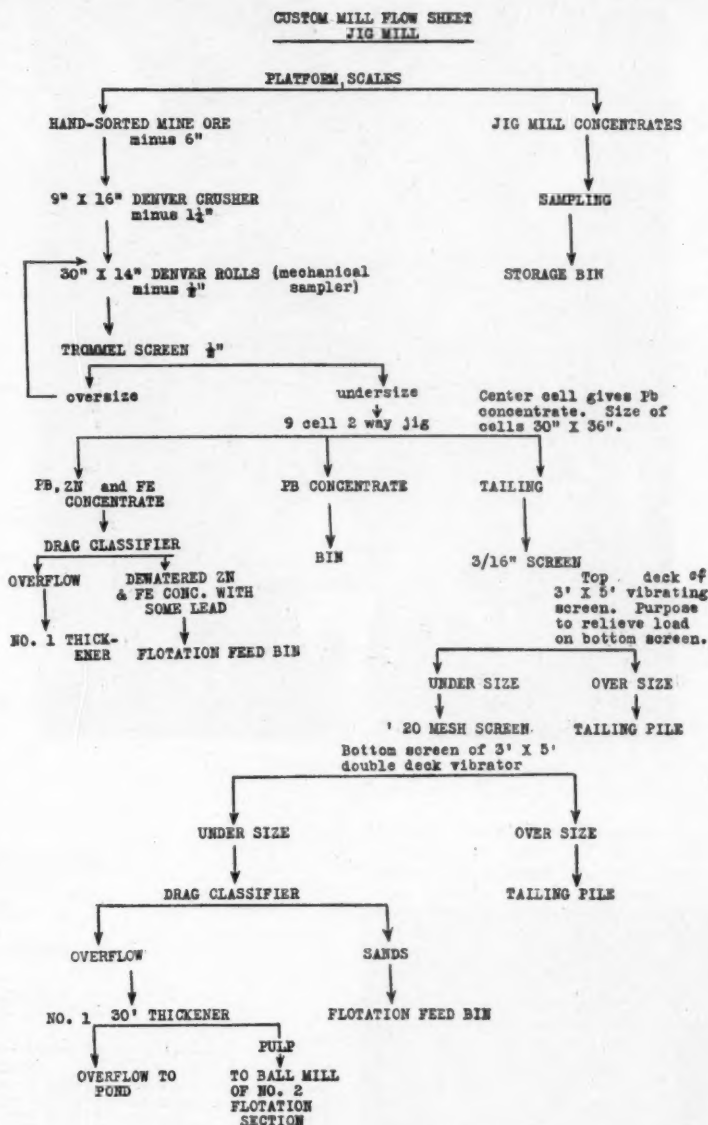
The raw material from which the three locally finished products are made, namely, lead concentrate, zinc concentrate, and commercial sulphuric acid, is typical southwestern Wisconsin ore. This ore contains lead, zinc, and iron in the form of sulphides together with a gangue of several different forms of calcium carbonate, plus small amounts of barite, smithsonite, and carbonaceous shale.

The ore, in the form of hand-sorted mine ore and jig mill concentrate, is trucked to the plant from a radius of 30 miles and is shipped in lots, varying from a few hundred pounds to 125 tons, from about 30 different sources or shippers. Since zinc is the predominant metal in value, the grade is designated by the zinc content and varies from an average of 8 per cent zinc in hand-picked mine-run ore to 18 per cent on an average in a rough milled concentrate.

The lead content in the ores is usually very small, but when present in sufficient amount above a reasonable recovery, the shipper is paid for the recoverable amount. The iron which is higher in amount than zinc in practically all ores and jig milled concentrates, is not penalized, but is paid for because of the sulphur associated with it, for it is this sulphur from which the sulphuric acid is produced.

General Features of the Custom Mill

All hand-sorted mine ore is sent to the crushing plant where it is reduced in size to minus $\frac{1}{2}$ -in., after which it is sampled with the Galigher mechanical sampler. Thence it goes to the jig, regardless of the grade, in order to recover as much lead as possible, before entering the flotation cir-



The Blockhouse mines. Typical mine plant and jig mill in the district



Interior of a two-jig mill

cuit, for a good lead flotation recovery in this S. W. Wisconsin zinc district is something very much to be desired.

The flotation plant is divided into two almost identical sections. Each has its lead, zinc, and iron circuit, and each has an hourly capacity of $7\frac{1}{2}$ tons, or a total of 15 tons per hour for the plant. The only difference is that section 2 takes all of the No. 1 thickener slimes assaying 5 per cent zinc, while section 1 does not. These slimes are, in effect, the diluent for section 2, whereas the minus 20 plus 48 mesh portion of the jig tailing constitutes the diluent for section No. 1. These diluents, too valuable to be discarded, are effective in holding the flotation feed at 14 per cent zinc.

It was mentioned previously that approximately 500 tons of hand-sorted mine ore, and rough milled concentrates were processed daily, yet the above-mentioned 15 tons per hour, or 360 daily tons of flotation feed leave a shortage of 140 tons. This shortage is found in the discarded plus 20 mesh jig tailing, resulting from the jigging operation of all hand-sorted mine ore.

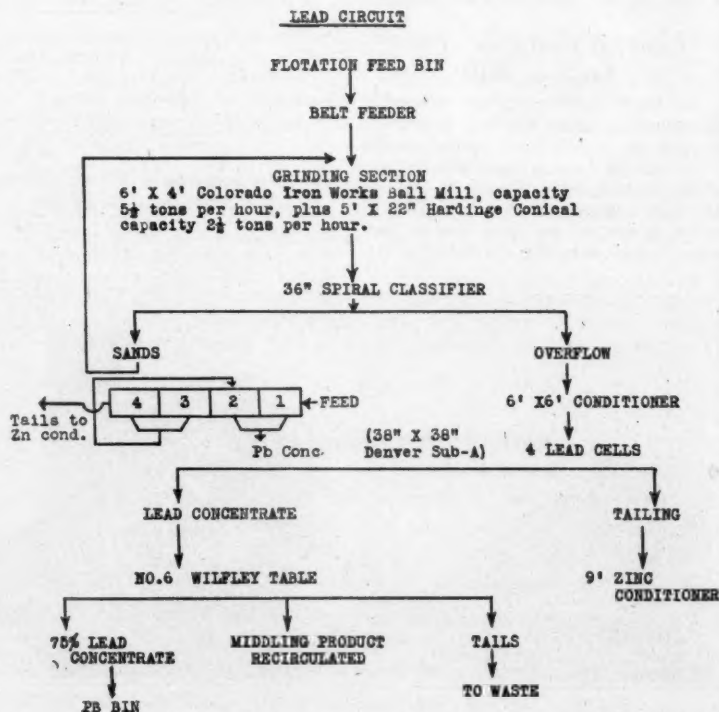
The lead flotation concentrate contaminated with "oil rock" could not be sent to a filter even if it were of sufficient amount to warrant the use of one, because of its low grade; therefore, it is sent to a No. 6 Wilfley table to grade it up to a finished product of approximately 75 per cent Pb.

In the iron flotation flowsheet, it can be seen that a high pulp density is carried in this circuit, which is not operated for recovery, but for grade. In fact, the FeS_2 is so abundant that the iron circuit of section No. 1 operates not much more than 50 per cent of the time. The sulphuric acid is added to the iron conditioner in order to lower the pH necessary in the preceding zinc circuit, for FeS_2 does not float readily in a moderately high alkaline circuit.

14 Per Cent Zinc Optimum Grade for Flotation Feed

The flotation feed is maintained at between 14 and 15 per cent zinc. If the feed contains more than 15 per cent zinc, the jig mill and flotation recoveries both suffer. If, for example, an 8 per cent flotation feed were used, all recoveries would be higher, but production would be almost cut in half. Therefore, from an economic standpoint, the optimum zinc content of flotation feed is held at 14 per cent, which is accomplished by mixing the purchased rough milled concentrates, averaging 18 per cent zinc, with the company's own jig milled concentrates, the minus 20 plus 48 mesh jig tailing, assaying about 3 per cent zinc, and the thickened pulp from the No. 1 thickener, assaying approximately 5 per cent zinc.

SECTION ONE OF Pb, Zn, and Fe CIRCUIT



All Lime vs. Soda Ash-Lime Lead and Zinc Circuit

A short time ago Messrs. Harold Lowe and Dan Kentro, of the American Cyanamid Company, together with the writer, were given an opportunity to prove the benefits of an all lime circuit. Section 1 of the flotation plant was turned over to them for a one week trial.

The outstanding features of the test were that 1.3 lbs. per ton of lime in the lead circuit were as effective as 6 lbs. of soda ash per ton, that the consumption of copper sulphate was reduced by 1 lb. per ton in the zinc circuit, a slightly higher grade of zinc concentrate and a tailing a trifle lower in zinc content were produced. This indicates that a material saving in flo-

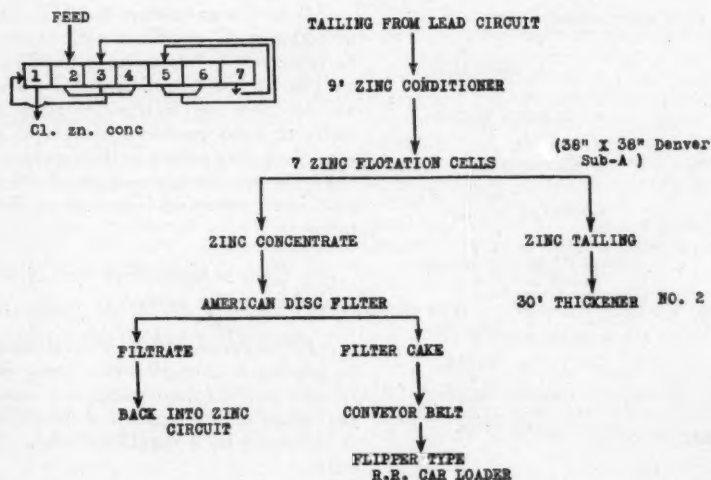
Reagents	Point of addition	Lbs./ton	% solids	pH
Lime	Grinding circuit	1.3	60	..
Cyanide	Grinding circuit	0.24	..	..
Aerofloat 25	Grinding circuit	0.1	..	..
Cresylic acid, pine oil mixture	Entrance Pb cells	0.02	31	8.8
Copper sulphate	Entrance Zn conditioner	1.5	..	9.0
Lime	Zinc conditioner	1.5	27	..
Sodium aerofloat	Zinc conditioner	0.2	..	..
B-23 frother and cresylic acid mixture	Exit zinc conditioner	0.09	..	..
Sulphuric acid	Fe conditioner	3.0	42	7.8
Sodium ethyl xanthate	Fe conditioner	0.14	..	..
Creosote	Exit Fe conditioner	0.09	..	..

tation reagent costs can be made with the all lime method.

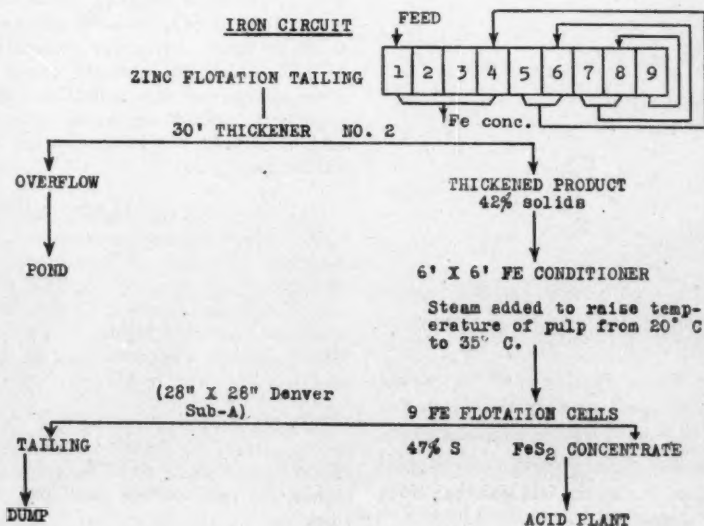
The only other reagent change was that sodium ethyl xanthate in the zinc circuit was replaced by sodium aro-

float of like amount. The grade of lead concentrate and lead recovery did not change; therefore, if, after further trial the results are as good as they have been, the company will adopt the all lime circuit in sections 1 and 2.

ZINC CIRCUIT



IRON CIRCUIT



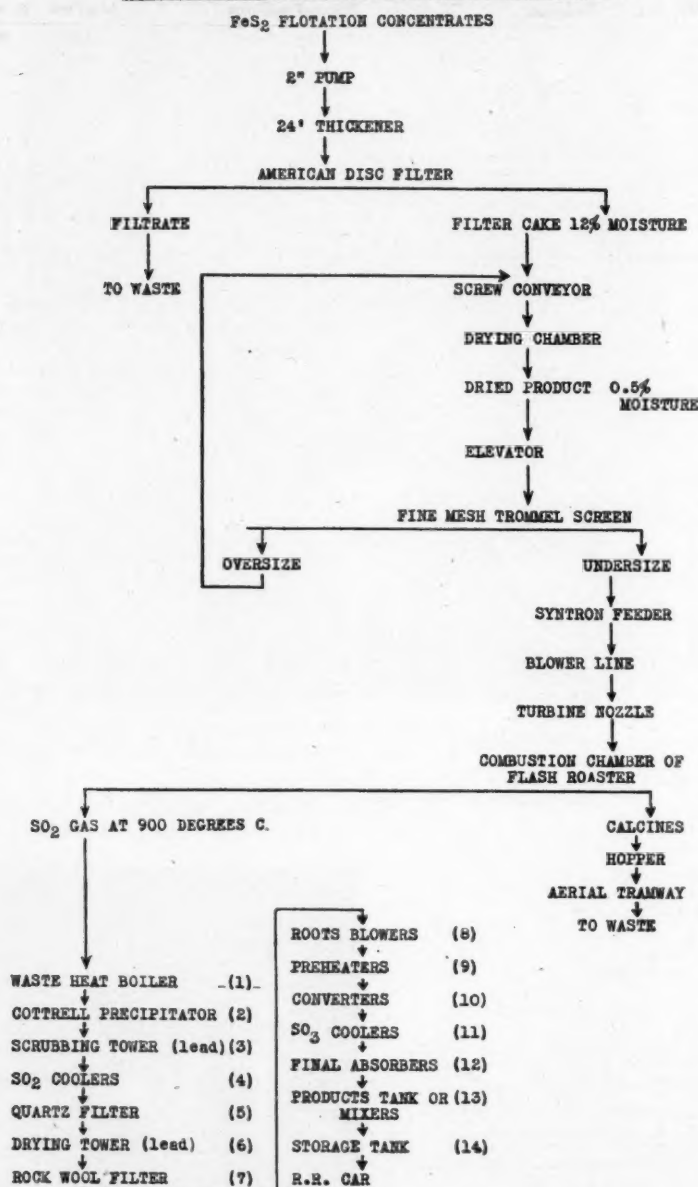
Flash Roasting

In principle, flash roasting is very similar to the burning of pulverized coal in the furnace of a steam boiler. Warm dry FeS_2 (47 per cent sulphur), is blown in at the top of a combustion chamber; in falling through a depth of 20 ft., the sulphur content is reduced to 0.5 per cent. This combustion, or burning, produces a temperature of 900 degrees centigrade, and the resultant gas contains the SO_2 for



Men and ore are hoisted by the can method

FLOW SHEET OF ACID PLANT
Contact Process Used in Sulphuric Acid Manufacture



EXPLANATORY COMMENTS

(1) Chief purpose not to produce steam power but most effective means for suddenly dropping gas temperature from 900 deg. C to 300 deg. C, to prevent formation of some SO₃ which would create difficulties and losses in subsequent cleaning process. The iron oxide in the gas would act as an inefficient catalytic agent.

(2) Electrifies dust particles removing approximately 95 per cent of them.

(3) A warm spray of downward trickling water meets the upcoming gas, thereby removing nearly all of the remaining dust. Warm water is used because it absorbs less gas than does cold water.

(4) Large lead pipe in coil form. Air cooled in winter. Water cooled in summer.

(5) Graded quartz rock minus 6 in. Removes some remaining dust.

(6) A downward spray of 60 deg. Be' acid meets upcoming gas to remove moisture.

(7) Shallow cast iron pans containing layers of rock wool on coarse screens to remove last traces of moisture and dust.

(8) Roots Connorsville positive type blowers.

(9) Steel U-tubes obtaining their heat from the exothermic reaction created in (10).

(10) In the converter, the SO₂ gas at 400 deg. C combines with oxygen to form SO₃. This union is hastened by passing the 6 per cent SO₂, and 94 per cent air mixture through a series of trays containing layers of a vanadium alloy acting as the catalyzer. The latter has the appearance of dried peas when observed from a short distance.

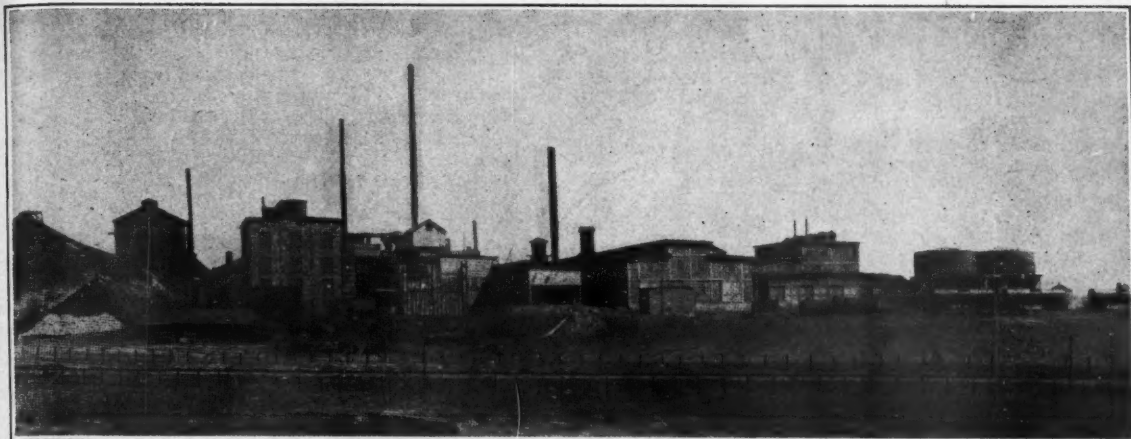
(11) Coils of high silicon steel pipes cooled by water spray.

(12) The vaporous SO₃ is condensed by coming in contact with a spray of 98 per cent sulphuric acid and concentration of the liquid is maintained at this point by a regulated inflow of water.

Theoretically, SO₃ + H₂O → H₂SO₄, but in practice this union is inefficient and of explosive violence, hence the absorption of SO₃ in a 98 per cent sulphuric acid. After this absorption of SO₃ which has brought about a high degree of concentration, the regulated amount of water is now added to hold this concentration at 98 per cent.

(13) 98 per cent H₂SO₄ is too highly concentrated for commercial purposes, therefore, it is reduced in strength to 66 deg. Be', or 93.5 per cent H₂SO₄, or in part to 60 deg. Be', which is 78 per cent H₂SO₄. Reduction in strength is accomplished by the addition of weak H₂SO₄, or water.

(14) No special pump or tank cars are necessary to transfer and carry the acid as H₂SO₄, at 60 deg. Be' or higher will not corrode cast iron or steel.



South view of the acid plant at Cuba City

the subsequent manufacture of sulphuric acid. The flash roaster itself, is a modified Wedge mechanical roaster. All the upper hearths and the upper portion of the central shaft have been removed, leaving the three bottom hearths with their portion of the central shaft. The two bottom hearths with their rabble arms constitute the drying chamber while the third hearth from the bottom with its rabble arms furnishes the floor for the combustion chamber above; this is 22 ft. in diameter and 20 ft. high.

Company Activities Give Impetus to Future Mining

The main office, located in Platteville, Wis., supports a geology department which is a storehouse of information for any one concerned with min-

ing activities in the S. W. Wisconsin and N. W. Illinois zinc districts.

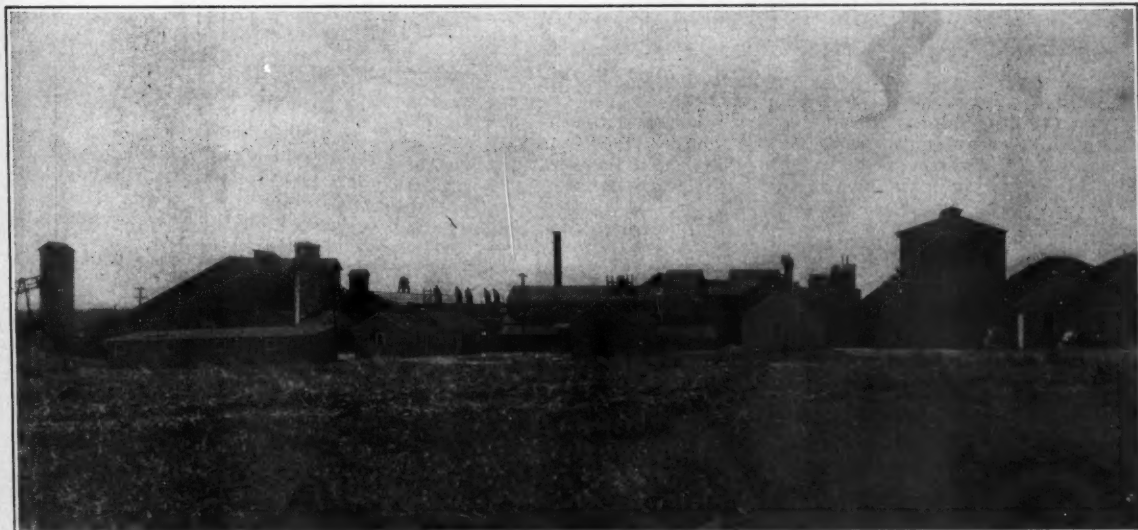
In view of the fact that the company has been in the district for 40 years it has available many records and maps of past and present mining operations. But the chief purpose of the geology department at present is to conduct extensive churn drilling campaigns for the purpose of discovering new ore bodies. When discovered and explored, these ore bodies are commonly subleased to reliable mining companies operating in the district.

General Economic Effect of Operations

The total number of the company's employes in the S. W. Wisconsin zinc district amounts to 115. These employes make possible the incomes and

employment of approximately 500 other persons, which goes to show how far-reaching the efforts of one operating company can be in the welfare of a community. How many people are indirectly benefited would be too difficult to ascertain. Needless to say, the economic benefits are indeed great. The Vinegar Hill Company is a subsidiary of the Youngstown Sheet & Tube Company.

The key operating personnel at the custom mill and acid plant is composed of Messrs. E. G. Deutman, general superintendent; John P. Lacke, construction and maintenance superintendent; and Clyde Trewartha, general foreman. These gentlemen have all been very helpful in providing information relevant to the various phases of the operation.



North view of plant showing the custom mill



Job instruction training for mine officials promotes safety

Education to Reduce Accidents In Coal Mining

A Report of the Safety Committee

Submitted by E. R. PRICE

THE chief responsibility for the promotion of safety in mining rests with top management and the recognition of this responsibility in establishing a safety program by a company is an evidence of the foresightedness of its management. Officials and workers are made safety conscious through instruction in safety principles; education, which is the sharing of knowledge with others, disciplines the minds of everyone with the result that safety, health and the well being of those who encounter the hazards of mining become the deep concern of both management and labor.

Safety education, therefore, is one of the most important phases in effective accident prevention and it should always be realized that the lead in any safety movement must be taken by the company management. As an evidence of sincerity, as well as for the

practical benefits, the company must provide and maintain all reasonable safeguards for protection against accidents but these in themselves are not sufficient to prevent injuries to workmen. In the final analysis the human element is the deciding factor and no safeguard will ever be effective unless properly used and observed by the employees. It should therefore be the aim of an educational program to so inculcate safety habits that safe methods of working become automatic.

It is recognized that the type or size of an educational plan will properly depend upon the extent of the operation of the coal company and it is therefore not intended that the program outlined in this report can be applied by the industry generally. However, the Committee is submitting it in the hope that it presents a few ideas which will be helpful and will

contribute in some measure toward promoting safety to the end that there will be a reduction in the toll of accidents now occurring.

Outline of Program

Our suggested program is set up under the following eight headings; namely:

1. Policy and Organization.
2. Function of Top Management.
3. Labor Relations Training for Supervisors.
4. Accident Prevention Training for Mine Officials.
5. Safety Instruction Course for Mine Workers.
6. Safety Incentives.
7. Safety Education for Schools in Mining Communities.
8. General.

Policy and Organization

Safety education should be the foundation upon which a well organized program for the prevention of accidents can be constructed and it should be the policy of every company to establish within its organization a system of training that will meet the con-

ditions at its mines. If such a program is to be effective it should come under the direction of a department head who would be responsible for setting up and maintaining the type of program required. Where there is a separate department of safety the promotion of education should be under the direction of the safety engineer or director of safety.

Function of Top Management

The operating head of the company should take the lead in doing those things which are necessary to convince his own safety department, as well as the men who are in daily contact with the hazards of coal mining, that safety pays; not only in protecting the individual workman, but also in efficiency of operation. He must be the spark plug for safety in his own organization.

He should keep in constant touch with the accident statistics and be the first one in the organization to recognize good safety performance. His personal interest evidenced by attending conferences and meetings, in promoting incentive plans, in writing letters from time to time emphasizing certain hazards, etc. will do much towards stimulating interest in safety on the part of the supervisory organization and among the workmen. He should at all times insist upon the strict observance of established safety standards and rules.

Labor Relations Training for Supervisors

In order to improve management-worker relations, which are essential to a successful educational program, there should be established a training program for supervisors for the purpose of instructing them how to approach and get along with other men, also in the most effective manner of instructing men under their supervision so that the men will understand and know what is expected.

Such a course of training could be similar to the Training Within Industry Program of the War Manpower Commission with which many operators are familiar. That program, which embraces (a) Job Instructor Training, (b) Job Relations Training and (c) Job Methods Training, could be modified so that special emphasis would be given to accident prevention.

It is highly important that all supervisors have a clear understanding of the wage agreement with the mine workers so that they know under what circumstances disciplinary action can be taken for failure of mine workers to observe the established safety rules and regulations.

The cooperation of the individual mine workers and of the local union,

either through the mine workers' safety committee for which there is provision in all wage agreements or the local mine committee, should not be a difficult matter, when there exists in the relationship between the management and the men the mutuality of interest that should prevail in a program of accident prevention.

Accident Prevention Training for Mine Officials

This type of training is necessary if the mine officials are to have a broad knowledge of the contributing causes of accidents and of the means of preventing them. The United States Bureau of Mines has prepared a course in accident prevention for mine officials which we recommend for all supervisors; this is in ten sections under the following titles:

1. The Prevention of Accidents from Falls of Roof and Coal.
2. The Prevention of Haulage Accidents.
3. The Prevention of Explosions and Fires.
4. The Prevention of Electrical Accidents.
5. The Prevention of Explosives Accidents.
6. Miscellaneous Accident Prevention.
7. The Value of Accident Statistics.

Our Committee has purposely avoided a detailed description of this course, but we do suggest a close perusal of its outline which has been prepared by and can be secured from the U. S. Bureau of Mines.

To illustrate the thoroughness with which each of the above subjects has been covered; the section relating to "The Prevention of Accidents from Falls of Roof and Coal" is subdi-

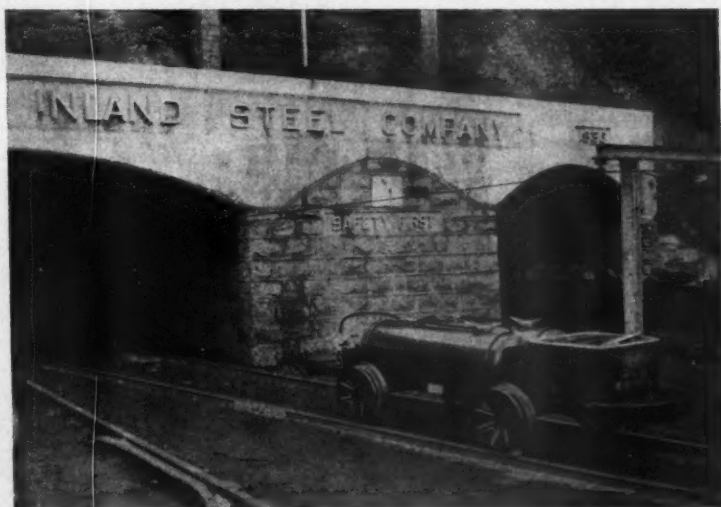
vided under the following headings:

(a) The importance of roof and coal fall hazard, (b) Roof and coal falls, (c) Method of mining, (d) Character of roof material, (e) Roof inspecting and testing, (f) Roof supports, (g) Advance mining, (h) Retreat mining, (i) Working face most dangerous area, (j) Essentials for roof support, (k) Bad practices resulting in fatalities, (l) Responsibility for roof fall accidents, (m) What mine management can do to prevent accidents from fall of roof and coal, (n) What the mine foreman can do to prevent accidents from falls of roof and coal, (o) Factors affecting falls of roof and coal, (p) Methods used by some companies in reducing roof-fall accidents, (q) Conclusions, (r) Showing of moving pictures and (s) Discussion of questions.

This course could also include a study of the state mining law, the safety rules and standards of the company, as well as a study of state and federal inspection standards, a thorough knowledge of which every mine official should have.

Safety Instruction Course for Mine Workers

We recommend the adoption of a course in safety instruction for mine workers patterned after the one prepared by the U. S. Bureau of Mines but modified to suit the conditions at



Track-mounted chemical tank provides a guard against mine fires

each mine. The Bureau of Mines course is subdivided into seven sections with titles similar to those in the course of training for mine officials. The textual matter naturally differs from that for mine officials, but such training, which we recognize must be on a voluntary basis, should be helpful in promoting safety education among the workmen, even if the course is taken by but a small percentage of the mine workers.

We suggest a careful study of this course by those who may wish to establish safety instruction for mine workers at their mines. Such instruction could be limited to the phases of operation that the management feels should have special emphasis or it could be as inclusive and in the same detail as contained in the Bureau outline.

Safety Incentives

Training, rules, posters, etc. can do no more than point out hazards; accidents must be prevented by the men themselves and after their education, the next step is to bring about their practicing the principles learned. Observance of safety rules does not occur automatically and some form of encouragement is needed. It would seem that the prevention of injuries and possible loss of life would be sufficient rewards to insure safe methods of working but unfortunately such rewards are negative and something more positive and tangible is needed. Different methods are used by many companies in the way of bonuses and awards of various types; this however is a subject for a report in itself and will be considered later by the committee.

Safety Education for Schools in Mining Communities

This opens a rather broad field, but offers real possibilities for accident prevention. To "sell" the children of a community on the promotion of safety ideas is to create a great influence for good as children are natural crusaders. But there is a still further advantage; "as the twig is bent so is the tree inclined," and ideas accepted by the boy will be retained by the man he later becomes. Here again is a subject for a complete report which is to be prepared later by the committee.

General

Safety education can also be promoted by the maintenance of attractive bulletin boards inside and outside the mine on which would be posted:

Report of accidents—suitable safety bulletins and posters—letters—reports of accident prevention progress—accident and other statistics—recognition of

good accident records of mines and individuals—those safety rules which management may want to emphasize from time to time—and many other matters which contribute to the safety education of the men.

There should be regular safety meetings or conferences, either inside the mine or at some suitable place on the surface, where information on accident prevention is disseminated. At some mines, group safety meetings are held by the section foremen once each month inside the mine on the sections where the men work. Such meetings are followed by monthly general safety meetings on the surface for each the day and night shift men.

Previous mention has been made of the adoption of adequate safety rules and standards for the instruc-

Public address systems are used effectively by the heads of the safety departments and others in broadcasting safety and other messages to the men while waiting for man trips or to the men at any other point where they may congregate.

District Mining Institutes contribute in a large measure to the safety education of supervisors, and they should be encouraged as well as supported by the industry.

First aid and mine rescue training in some form should be included as a part of any program of safety education.

Vocational training for mine workers, who aspire to supervisory positions, is being carried on probably more generally now than at any time in the past. Such training, which is a morale builder as well as educa-



Boys in a mining community take great interest in practical safety instruction

tion and guidance of the men in carrying out their work. These rules should be kept in conspicuous places at the mine. At some mines, the employment manager gives each new man, either a copy of the company's safety rules applying to his particular job, or a book containing all of the company's safety rules. Other companies give each new man a personal note signed by the Safety Engineer, who, in an appropriate message, welcomes the new man as a member of the company's family of workers; also, calls his attention to the company's safety rules and standards posted at the mines and particularly to the few special rules listed in the message applying to his particular job.

tional, should be developed as far as practical.

Conclusion

In presenting this report the committee wishes to re-emphasize two points. First, the purpose here has been to outline broad principles of education rather than to recommend details of procedure. Second, the subject of safety education has so many phases that this outline has not attempted to cover all possible avenues of approach. Further study is recommended both by the committee and by the industry.

Approved September 28, 1945
Subcommittee on Safety Education.

25 Years Progress in Coal Mining

The Development of Strip Mining

THE American Mining Congress has asked me to write an article entitled "Twenty-five Years Progress in Strip Mining." Such a commission gives one wonderful latitude. I really do not know whether the editors want a technical analysis of the mechanical progress or personal reminiscences. After some reflection, I have decided to recount in a rather non-technical way the development that has taken place in the strip mining industry since I have been connected with it.

When I was asked to write on the subject, "Twenty-five Years Progress in Strip Mining," some one made a mistake, because I began to be a strip mine operator in 1912, 33 years ago. Stripping with power shovels really began in 1877 near Pittsburg, Kans. J. M. Hodges and A. J. Armil used a conventional type railroad steam shovel and so far as we know, these were the first men to mine coal using mechanical power. Farmers had been getting coal for local use since pioneer days with teams and slip scrapers. It is interesting to note that Mr.

Hodges, who stripped coal in 1877, afterwards incorporated the Pittsburg & Midway Coal Mining Company, in Pittsburg, Kans., and was its first president. Mr. Hodges was succeeded in 1911 as head of the Pittsburg & Midway Coal Mining Company, by Charles F. Spencer. His son, Kenneth A. Spencer, now heads that organization. To the Pittsburg & Midway Coal Mining Company, therefore, goes the honor of being the oldest organization continuously engaged in the mining of coal by the strip method. This company is now the largest strip coal producing company operating in the Pittsburg, Kans., field.

Early Shovel Installations

There is record of two full revolving steam shovels used in uncovering coal in Pittsburg, Kans., in the year 1910. These units were very small, used 1½-yd. buckets, so production was limited. It was in the year 1911, when the Marion Steam Shovel Company built a shovel with a 3½-yd. bucket, especially designed for coal stripping,



By R. H. SHERWOOD

President
Central Indiana Coal Co.
Indianapolis, Ind.

for W. H. Hartshorn, in Danville, Ill., that the production of coal by the stripping method really began. Before that, stripping machinery had been more or less of makeshift character adapted from equipment originally designed for general construction work. After the Danville shovel was proven a success, the strip mining industry began to grow steadily, with one group of operators in the Indiana-Illinois field, and the other group headed by Charles Spencer in the Kansas-Missouri field.

It was my brother-in-law who lived in Danville, Ill., who really started me in this industry. In 1912 my sister wrote me that he was considering an investment in a new method of mining coal by stripping the overburden with steam shovels, but hesitated to go into the venture unless I, who had had experience in construction work and the moving of dirt, approved of the idea. Upon receipt of his letter, I took the first train to Danville and met W. G. Hartshorn, an experienced underground coal operator who had the vision and courage to risk nearly all of his hard earned dollars in this new method of mining. What I saw when I got to Danville was a full revolving shovel, weighing about 125 tons. I think it had a 60 ft. boom and I know the dipper had a capacity of 3½ yds. Mr. Hartshorn and Grant Holmes, proprietor of the local machine shop, who had formerly been construction superintendent for the Marion Steam Shovel Company, had conceived the idea of making a full



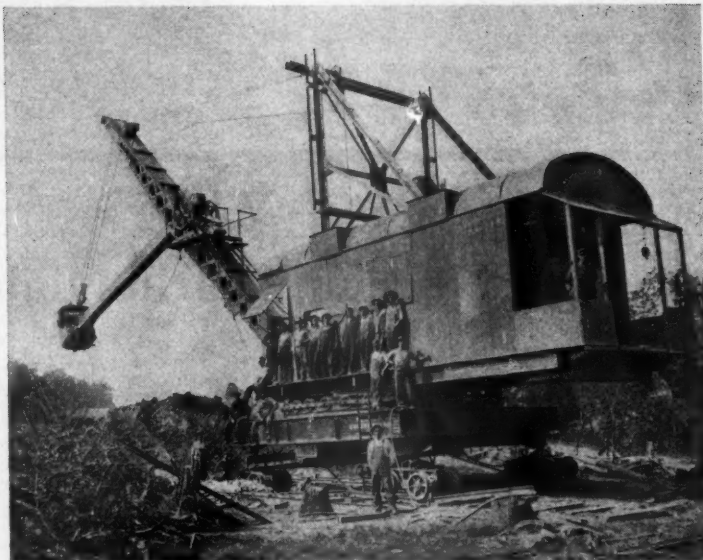
Pioneer coal stripping in the Brazil, Ind., coal field. After overburden removal the coal was loaded by hand into railroad cars

revolving shovel of what was then considered mammoth size.

The Marion Steam Shovel Company was very dubious as to whether such a huge piece of machinery would hold together and while they were glad to build it, they were unwilling to make any guarantees or even an estimate of cost. Mr. Hartshorn and Mr. Holmes finally persuaded the shovel company to undertake the construction of a machine on a basis that presented no risk to the Marion Steam Shovel Company. The manufacturers quoted a price for the shovel in cents per pound, which was accepted by the buyers. The shovel company guaranteed nothing—the buyers took all the risk. This shovel had been erected and coal was already being produced when I reached Danville in 1912. The territory that Mr. Hartshorn had was ideal. It would make present day strip operators' mouths water. There was a 7-ft. vein of coal overlaid with about 20 ft. of overburden consisting of soft cheese-like shale and coarse gravel, with a little dirt on top under the grass roots. The only catch to these ideal physical conditions was that the coal lay in bottom land a few feet below the level of an innocent looking creek. This slow, creaky shovel was mounted on railroad trucks moving on a portable track. It took four men to lay the track in front of the shovel, and four operating men on the shovel deck: engineer, thrust engine operator, known as cranesman, oiler and fireman, and a man to throw coal on the shovel deck—nine men in all.

Hand Drilling and Loading

The coal, which was very hard, was drilled by hand, one man to hold the drill and two to wield sledges. It took about 30 minutes to put down a hole. The coal was shaken with a cup of black powder and fired with a squibb, and then pried loose with crowbars. It was loaded by hand into four-wheel wooden cars built for underground mining, moving on narrow gauge track. The cars were hauled by mules to the foot of an incline and then taken by cable out of the pit to the tippie, where they were dumped on a bar screen. We made two sizes of coal, 1½-in. screenings and 1¼-in. lump. Despite what now seems very crude procedure, Mr. Hartshorn was making modest profit. It did not take me long to make what was to me personally one of the most important business decisions I ever made. That was, to advise my brother-in-law to make an investment in two other mines with Mr. Hartshorn. I also raked and scraped together what money I could and became an investor. I put all my eggs in one basket and took a job with Mr. Hartshorn so I could watch the basket.



One of the first coal stripping units built in 1912

Based on the experience we had with this first full revolving shovel, we ordered from the Marion Steam Shovel Company two more shovels. These had 70-ft. booms and 7-yd. buckets. This was done in February, 1913. After we had committed ourselves for the purchase of these shovels, disaster struck. The still remembered 1913 flood swept over the middle west and the innocuous looking creek which was kept within its banks by our first spoil pile rose to a mighty torrent. I will never forget standing on the bluff and looking over that bottom land where the mine was, and seeing the whole country under 30 ft. of water. The sheaves on the end of the boom of our precious shovel were just visible above the muddy, swirling flood. We had no pumps and those we finally got were very inadequate. We did not get that mine in operation again until mid-summer, but we learned a lot about the handling of water in strip pits.

Shovels of 1912 Fundamentally Like Today's Giants

It is interesting to note that the Marion shovel with the 3½-yd. bucket, built in 1912, and the shovels with buckets of 30 to 35 yds., such as are built today, are fundamentally of identical design, the principal difference being in size and perfection of manufacture. The basic principle of side casting dirt when operating strip pits has changed not at all. The price of steam shovels in those early days was about \$35,000. Today the price for an electrically operated shovel with a 33-yd. bucket is about \$500,000, electricity having replaced steam as a

source of power. The complement of men needed to operate present-day shovels has been reduced from nine to three. Wages for skilled shovel operators have gone from about \$3.50 per day to \$12 per day, plus overtime. Overtime is important because these machines operate continuously, 24 hours a day and 7 days a week. Shovel operators, under the present union contract, earn over \$5,000 per year.

The first step forward that we made in the Danville stripping field after we recovered from the flood was to introduce a little 2-yd. full revolving shovel to load coal, thus replacing hand shoveling. The next was to get little saddle tank locomotives in the place of mules.

Coal Cleaning Problem Presents Itself

Stripped coal was not accepted by the public in those days with any great alacrity, particularly after we began to load coal with the little shovels, because it was impossible to keep impurities out of the coal. We had no washers, and picking tables were a great luxury. I remember distinctly my humiliation when in 1918 I applied to the Indiana Coal Operators Association for membership for the Central Indiana Coal Company which I had then organized on my own account in Indiana. Phil Penna, the much beloved and long time secretary of that association told me bluntly that my dues and membership were not acceptable. He said "you strippers do not sell coal—you sell dirt, and we do not want you in our organization." I think that brusque turndown from Phil Penna was fortunate for me because it made me think. Business

was pretty good in those days because of World War I, and I could sell the dirt I was mining, and it was dirt. I knew that the anthracite operators were successfully cleaning their coal with some kind of a washing process, and that also one of the steel companies in the Birmingham district was washing the coal they used for coke making. I went to Birmingham and saw a Montgomery basket washer plant in operation, then to Scranton where I saw what was then known as the Elmore jig.

I decided that the jig method of cleaning coal was better than the Montgomery basket type washing system at Birmingham. I found Mr. Elmore in Philadelphia, a very capable engineer, and engaged him to re-design his apparatus as best he could for handling bituminous coal. This particular type of jig had never been used to work in soft coal and I have always felt indebted to Mr. Elmore, and the engineer, Mr. Bohm, whom he sent out to Indiana to build our first jig, for the excellent jobs they did. We built a little two-cell Elmore jig with laminated cypress tanks, the water being agitated by plungers operating from eccentrics on a line shaft, at the Robin Hood Mine No. 1, south

of Dugger, Ind., and had it standing idle for six months waiting until our customers refused to buy our dirty screenings, which they did most positively when the market broke in 1919. After we had had about a dozen cars refused on account of quality, we started our Elmore jig, hoping and praying that it would work. After the usual fussing and fiddling, we were able to produce screenings which were competitive with, if not better than, screenings mined underground. I shall always feel grateful to Phil Penna for insulting me when I applied for membership in his organization.

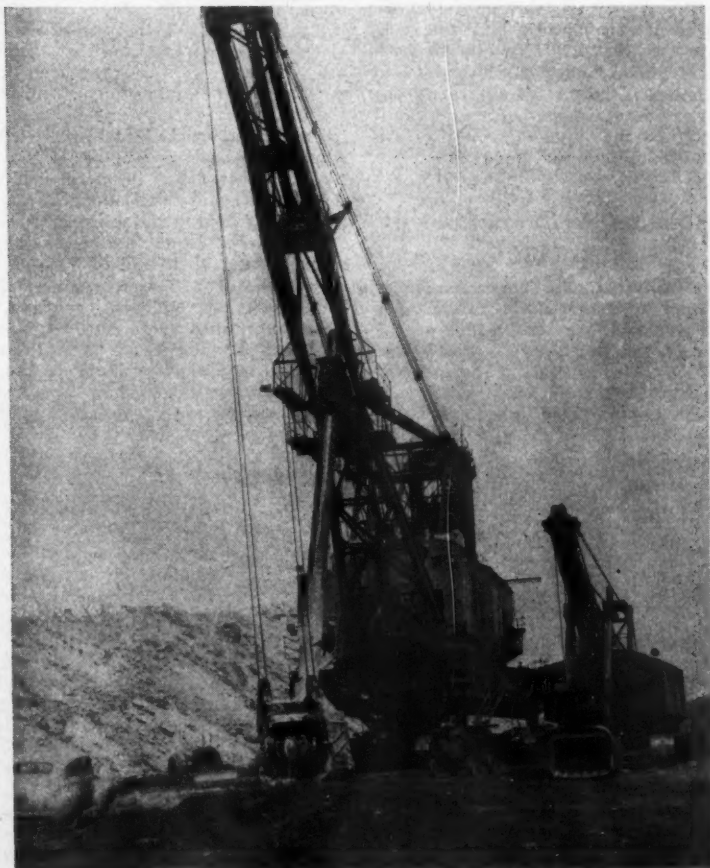
We now have the most elaborate jigs built for us, with capacity as high as 300 tons per hour, full of gadgets and automatic features, but the principle used is exactly the same that Mr. Elmore built into the little affair that saved my financial life in 1919. As a matter of fact, we are now operating at one of our mines an Elmore jig installed in 1923, with wooden plungers and cypress tank that is a replica of the first one we built and we are turning out coal just as free from impurities and at no greater expense than the coal which is washed by the huge,

elaborate affairs that are generally used today. The only difference is automatic operation and size.

Horizontal Drilling Introduced

As the stripping industry grew and excavating machinery increased in size, and we began to uncover coal with up to 45 ft. of overburden, the cost of drilling and shooting began to be a serious item. The practice was to drill ahead of the shovel, with well drills, and in those days the light well drill rigs used for shallow holes were not well designed and were far different from the well drills we have on the market today. One of the big objections to vertical drilling was the fact that most of our holes were wet and to shoot a wet hole, we had to use expensive glycerine dynamite. I remember very well when W. H. Stewart, then superintendent of the two mines I had in Indiana, came to me and said he believed that the auger type of horizontal drill which was used for drilling coal in underground mines, could be developed for strip mining, so that a 40-ft. horizontal hole could be bored on the shale immediately over the coal. We could then shoot our overburden at less cost of drilling, and better yet, use cheap powder instead of expensive dynamite, because the holes would be dry.

I asked one of the internationally known manufacturers of drilling equipment if they would undertake to design this type of drill, telling them I thought there would be a real market for such a piece of equipment. They were very much interested and sent their chief engineer from New York to inspect our property and make a report. I remember his report very well—it was long, wordy and elaborate. His conclusion was that it would be impossible to drill a 40-ft. horizontal hole in shale with jointed augers and keep the hole straight. Mr. Stewart was not convinced by this report and began experimenting with home made equipment. By trial and error he finally produced a drill that would bore 40-ft. holes horizontally and he had no trouble whatsoever in keeping the holes straight. We patented the idea, then promptly one of the drill manufacturing companies pirated the patent and proceeded to manufacture drills much better in detailed design than the home made affairs we were able to make in our inadequate shop. I had no desire to get into a patent fight, so eventually sold our patent, and at the end of the day Mr. Stewart and I divided a \$1,000 profit on our venture. I think he deserves full credit for this original development. All I did was to back him financially. Horizontal drilling equipment based on our patent is now used all over the world.



Future equipment may surpass the large models of today

The Trend in Haulage

We in the stripping industry began hauling our coal out of the pits first with mules, then on narrow gauge track using 4-wheel pit cars and steam power. Our next step was 4-yd. contractors' side dump cars. We then graduated to standard gauge equipment and specially built drop bottom cars. In the last ten years, steam haulage has almost disappeared, being replaced in the larger mines with especially built trucks. The tendency is to use Diesel-powered semi-trailer units with a capacity of 25 to 30 tons, although a few operators are using trailers with a capacity of 40 tons of coal. I heard the other day that some manufacturer is building 50-ton coal haulers which is the same capacity as standard railway coal cars. It will be interesting to learn whether such huge units are economical or not.

Reforestation of Lands

One of the questions that is most interesting to the general public concerning strip mining is what happens to the land after it is turned upside down by the stripping machinery. The first reaction of the general public towards coal stripping is that horrible, devastating destruction of scenery and valuable farm land is taking place. It is true that some agricultural lands are temporarily destroyed by strip mining but the final result is an undoubtedly economic benefit to society. It can be easily demonstrated that it takes nearly 400 years to grow customary farm crops such as corn and wheat which would equal in dollar value the value of coal produced on an acre of agricultural land. Further, the coal that is stripped, lying near the surface as it does, cannot be mined by the underground method, so this mineral wealth would be lost to posterity forever if not mined by the strip method. The states in which most of the strip coal is produced are Indiana, Illinois, and in the coal fields of south-eastern Kansas and western Missouri, although during the war stripping increased considerably and I think temporarily in Ohio and Pennsylvania.

Much thought has been given and experimental work done by the associated operators throughout the middle west in an effort to find the best way to put the turned over strip land back into profitable agricultural use. Working with the agricultural experts of the state universities, reforestation of stripped land has been carried on systematically by the associated operators for the past 15 years. An organized program is now established that is rapidly changing the stripped over land from what is an apparent desert to land which is, or soon will be, profitable agriculturally. It has been found that both forest trees and forage grasses thrive excellently on stripped over land. The loosening of



Farm roadway made by bulldozing the tops of spoil piles

the dirt often makes the ground more productive than it was before. In the State of Indiana, the reforestation of stripped over land is supervised by the state government, and is mandatory. In Illinois and the Kansas fields, the operators are voluntarily reforesting their spoil banks. After all, the acreage of arable land turned over by coal stripping is but a fraction of 1 per cent of the total farm land in the country, while the value to society of the natural resource is very great.

Thoughts on Limitations of Strip Mining

I am often asked what are the physical limits of coal stripping. My answer is, I do not know. It depends on the ratio of the thickness of coal to the depth of overburden, the character of the overburden, and the type of machinery used. Draglines are now being

make with 25-yd. buckets. Moreover, one manufacturer has designed one with a 50-yd. bucket, and has sold it, as it stands on the drawing board. It would be physically possible to uncover coal with these machines where the depth of the overburden is 100 feet or more. Limiting factors are the value per ton of the coal, and the expense of blasting the overburden. I am rather of the opinion that, in the coal fields of the middle west, with which I am most familiar, a ratio of 20 ft. of overburden to one of coal in the vein is about the economical limit. However, research and experiment are on the march. It may not be very long before we can drill half-in. holes into which we drop a pea-sized atomic bomb carrying sufficient energy to move mountains. How futile it is to prophesy anything these days. In science and industry anything may happen—truly, we don't know where we are going—we are simply on our way.



Reforestation in Indiana of stripped over land pines planted in 1934 are now up to 5 in. in diameter

Sinking and Equipping the New Leonard Shaft—(Part II)

The Most Modern Equipment is Installed to Meet Capacity, Efficiency and Safety Requirements

Editor's Note: Part I of Mr. Eathorne's interesting article on the new Mount Hope mine shaft appeared in the October *Mining Congress Journal*.

By WM. EATHORNE

Mining Engineer
Albany, N. Y.

EACH ore skip weighs 15,300 lbs. and is designed to carry a load of 22,400 lbs., thus making a total load of 37,700 lbs. The double-deck cage weighs 20,000 lbs. and was designed to carry a maximum load of 20,000 lbs., making a total maximum load of 40,000 lbs. The inside measurements of the lower cage deck is 12 ft. by 6 ft. 5 in. while the upper deck measures 11 ft. 6 in. by 6 ft. 5 in. The cage is intended to carry a maximum of 60 men. The counterbalance operating in conjunction with the cage weighs 29,000 lbs. The four hoisting ropes necessary to operate the foregoing hoisting equipment are all 1½ in. in diameter.

Head Frame Enclosed with Fireproof Materials

The permanent steel head frame is 148 ft. in height and was erected around the temporary steel head frame while sinking was in progress; it was not used, however, during the sinking and concreting operations. The four sheave wheels located near the top of the head frame are 12 ft. in diameter. The entire structure, including the sheave wheels but with the exception of the back braces, is completely housed in with corrugated Transite ¾-in. in thickness. This is a fireproof material manufactured from a mixture of cement and asbestos.

Hoists

Two modern, electrically driven, Nordberg hoists have been installed in the large, concrete-block hoist building for operation of the skips and cage. The ore hoist has two 14-ft.-diameter drums, which are operated in balance when hoisting is in progress. Power for operation is made available by means of two 900-hp., 600-volt, d.c. motors. The cage hoist is equipped with a 12-ft.-diameter drum, 20 ft. in length. A center flange on the drum facilitates operation of the two hoist cables,

which are needed to operate the cage and counterbalance. A 900-hp., 600-volt, d.c. current motor is used to operate this hoist. Two motor-generator sets (one operating in conjunction with each hoist) operated from a 2,300-volt, a.c. circuit, are used to furnish the direct current used by the hoist motors. The generators are installed in a separate room adjoining the hoist house.

Brakes and Controllers

Both hoists are equipped with hydraulic brakes and fitted with Lilly controls and indicators. Limit switches are located near the sheave wheels for further protection against an overwind. The Lilly control of the cage hoist is set for a maximum speed of 800 ft. a minute when the cage is carrying men and at 1,200 ft. a minute when carrying materials. The two Lilly controls on the ore hoist (one for each skip) are set for a maximum speed of 1,800 ft. a minute. Safety devices have been provided on both ore skips and the cage as a measure for preventing a run-away in the shaft. These are of regulation type in which cams or dogs, operated by means of stout springs designed to grip the guides, should the ever-constant pull on the hoist cable relax for any reason.

Signaling Systems are Most Modern

The signaling systems available for use in connection with the operation of the hoist are as follows:

1. A Teletalk system, used as a call system in operating the cage and for a similar purpose in cases of emergency in the operation of the ore skips.
2. An electronic hoist signal system for use in operating the cage.

3. A locked signal-box, hoist signal system, for use in conjunction with the electronic signaling system used on the cage.

4. Two regulation call signal systems for use in the operation of the ore skips, one for each skip.

5. Two regulation hoist signal systems for use in the operation of the ore skips, one for each skip.

Teletalk Signaling System

This system is identical to that in use for intercommunication purposes at many plants, offices, and garages throughout the Nation. It provides instant voice-to-voice contact between all places where the equipment has been made available, which includes all stations, skip pockets, the shaft collar, and hoist rooms. Operation is by means of a 110-volt, 60-cycle, a.c. circuit. This system is used for all call signals made in conjunction with the cage and it can also be used for a similar purpose at the skip pockets, but its use at the latter is reserved for emergencies. Its use as a voice-to-voice communication system replaces the necessity for a telephone.

Electronic Signaling System

The electronic signaling device installed at this operation is used in operating the cage. By its use, signals may be made to the hoist engineer from any location in the shaft while the cage is at rest or in motion. No electrical conductors are necessary in the shaft for its operation. Operation is by means of a standard Crouse-Hinds signal switch fitted with a ¾-in. pull cord; this has been installed at a convenient height on the inside of the upper cage deck.

The equipment necessary for operating the electronic signaling system consists of four major pieces, one of

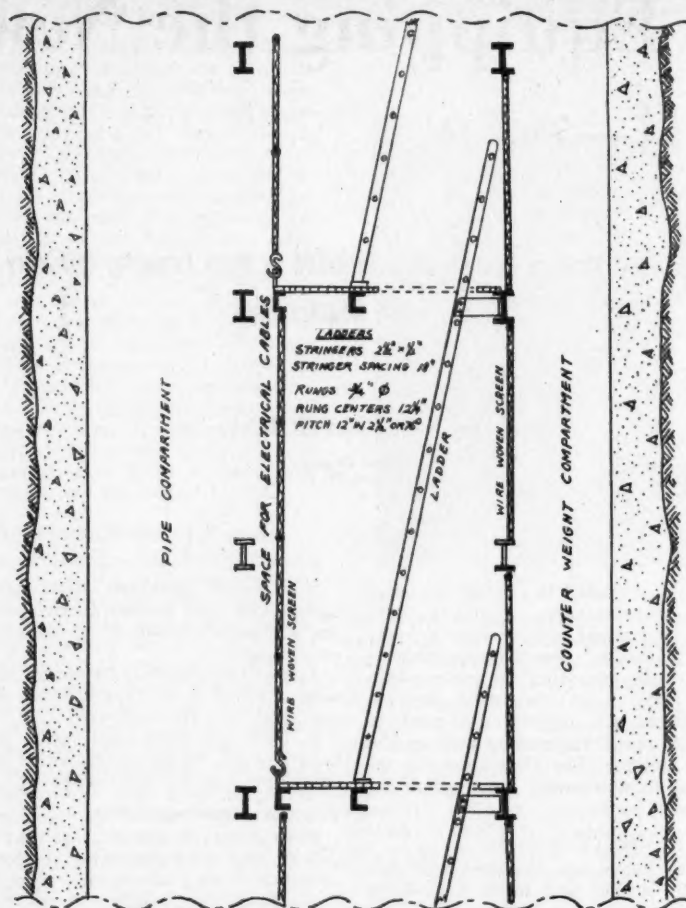


Fig. 3. Section of shaft showing arrangement of ladderway, pipe and counterweight compartments

which is installed on the cage and the other three installed on surface. The equipment carried on the cage consists of a signal box, measuring about 10 by 14 by 8 in., and a wet cell battery. These are fastened to the inside of the cage near the top of the upper deck. The signal box contains a transformer, a heater tube, a condenser, resistors, and a vibrator. The battery used is an ordinary heavy-duty automobile type having a capacity of 120 ampere-hours; it needs charging once a week with moderate use and perhaps twice a week when more than average use is made. A horn is used in the hoist room for recording the cageman's signals; the system is neither audible or visible to the cageman when being operated.

Two leads from the signal box are attached as follows: One to the cage and the other to the hoist cable at a point about 14 ft. above the skip. The potential difference across the distance between these two connections, induces a signal current into the hoist

cable when energized by means of the wet cell battery. The electronic impulses so induced into the hoist cable are picked up by means of an antenna or pick-up loop, installed close to the hoist cable at a point near the sheave wheel. The antenna is in the shape of a square with sides about 22 in. in length. One leg or side parallels the hoist cable, the intervening space between it and the hoist cable being about 3 in. (See Fig. 4.)

A conductor from the antenna to an eight-tube radio receiving set about 4 ft. away makes it possible to step up the impulses picked up by the antenna. After being stepped up in the receiving set, electrical current from a 110-volt, 60-cycle, a.c. current is released to operate the horn installed in the hoist room. The receiving set is operated by means of the 110-volt electrical system.

Although the shaft is fairly wet, this apparently does not cause any inconvenience in operating the electronic signaling system. That the

equipment used for signaling by this means is extremely sensitive will be apparent to all. However, by assigning an electrician to look after it, very little inconvenience has been experienced. It has been found that trouble may be easily diagnosed after a little experience, simply by listening to the signals; fading, erratic, or noisy signals will indicate that some part or parts of the equipment either need adjusting or replacing.

Locked Switch Box, Hoist Signaling System

This system has been installed for operating as a cage hoist signaling device in conjunction with the electronic system. Locked box signal switches, fitted with $\frac{3}{8}$ -in. pull cords, are conveniently located close to the cage compartment at all stations and the shaft collar. The system is operated by means of a 110-volt, 60-cycle, a.c. circuit. It may be described as a regulation hoist-signal system, except that a switch cannot be operated until the box is unlocked. When put into operation, the system operates a buzzer in the hoist room. The cage tender carries a master key which has to be inserted into the keyhole of the built-in lock of the switch and the lock unlocked before a switch can be operated. The procedure is very similar to that we perform when we wish to make use of our automobiles. The cage tender will resort to this system for signaling whenever the lower cage deck needs spotting or whenever in-between spotting of either cage deck becomes necessary at stations. Often it is more convenient to load and unload materials when the floor of the cage deck is a few feet above or below (more often the latter) a station. In such instances, signaling from the deck of a cage would be both undesirable and impractical. The locked switch box here described has been installed to overcome this problem. After a cage tender has completed his task at a station with the aid of this signaling system, he must spot the upper cage deck at the station and then remove the key from the switch box, at the same time locking it. He then resorts to the electronic signaling system installed on the upper cage deck for as long as his work can be safely done by using that means of signaling.

Call Signal Systems for Ore Skips

Each ore skip has an independent call system which may be described as of a regulation type, operated by means of standard Crouse-Hinds signal switches, fitted with $\frac{3}{8}$ -in. pull cords, and located at all stations and skip pockets. A 110-volt, 60-cycle, a.c. circuit is used in operation. The systems are used for call signals made in connection with the ore skips and also as a repeat signal system by the hoist

engineer whenever hoist signals, or call signals, are given by the cage tenders. In the hoist room, a buzzer and a light record the signals, and at the stations and skip pockets, a buzzer does the recording. The Teletalk system previously described is also available at the skip pockets, but its use as a call system in connection with ore-skip operations is limited to emergencies.

Hoist-Signal Systems for Ore Skips

The hoist-signal systems for use with the ore skips, one for each skip compartment, are of regulation type. They are operated by means of a 110-volt, 60-cycle, a.c. circuit. Standard Crouse-Hinds signal switches, fitted with a $\frac{3}{8}$ -in. pull cord, are provided at all stations and skip pockets. A bell and a horn are provided for recording the signals in the hoist room. This system is used in the actual movement of the ore skips. All signals made on either of these systems are repeated by the hoist engineer on the respective call signal system before actual movement of skips take place.

Signal Code

The signal code posted and in use at this operation is as follows:

Bells

- 1—Hoist.
- 1—Stop.
- 2—Lower slowly.
- 3—Hoist slowly.
- 5—Blasting signal.
- 7—Emergency signal.
- 2-1-1—Release cage or skip.
- 1-2—Shaft collar.
- 2-1—10 level.
- 2-2—17 level.
- 2-2-1—17 crusher station.
- 2-3—21 level.
- 2-4—23 level.
- 2-5—25 level.
- 2-5-1—25 crusher station.

Accident Problems

Two fatalities occurred during the sinking operation. Both were caused by falling objects. The first, occurring when the shaft was about 150 ft. deep, was caused when an engineer's plumb line, used for keeping the shaft in alignment, became entangled in the crane hook. This resulted in the plumbing reel and the frame which held it being pulled into the shaft from its location at a point close to the shaft collar. The plumbing equipment, weighing about 100 lbs., struck one of the men working at the shaft bottom. He was injured to such an extent that death followed soon after hospitalization.

The second fatality was caused when a rock weighing somewhere between 50 and 60 lbs. fell from the side of the shaft and struck a man in the back while working at the shaft bot-

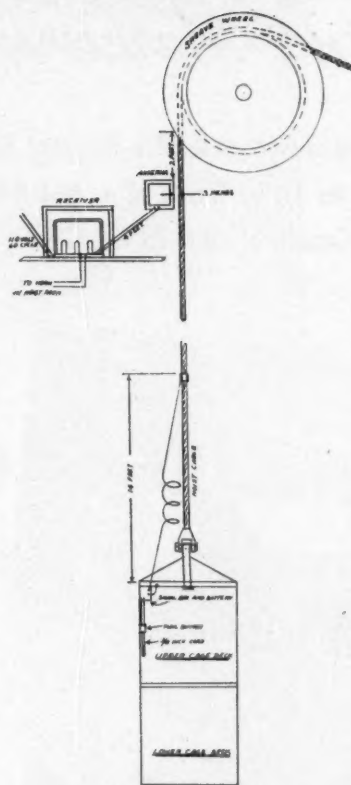


Fig. 4. Signals may be made at any time or place from within the cage

tom. Although the rock fell only 15 ft., the man's injury proved fatal a short time after his arrival at a nearby hospital. Since reports of rock sloughing peculiarities have been mentioned in connection with this shaft-sinking operation, this may have been one of those occurrences.

Conclusions

This shaft is of modern design and some unique ideas were introduced in the sinking, lining, and equipping operation.

Records in Federal Bureau of Mines files indicate that several hundred lives have been lost in mines in this country over the past 35 years through fires that originated in timbered shafts. In several instances the toll of life taken was disastrous. Such instances as the Granite Mountain shaft fire at Butte, Mont., in 1917, when 163 miners lost their lives, and the shaft fire at the Argonaut mine at Jackson, Calif., in 1922, when 47 miners lost their lives, should be constant reminders of what can happen should a fire get started in a timbered mine shaft. No such an occurrence is possible in this shaft, for timber is entirely absent.

The means of support used in this

shaft probably would not be suitable or even advisable for all the kinds of rock that might be encountered in shaft sinking. Few shafts, however, encounter bad ground for their entire depth, and where bad sections are encountered, additional support by increasing the thickness of the concrete together with steel reinforcement should go far toward making a safe shaft, it being always remembered that a safe shaft will also be an efficient one.

It would probably be inadvisable to place steel sets in metal-mine shafts where there is a possibility of acid waters coming in contact with the steel. Those who have observed results when corrosive water has come in contact with the haulage tracks in some of our copper mines will readily concur.

With due weight to economic exceptions, it is noted that many mines could profitably make use of a modern shaft. The initial cost is one major reason why more such shafts have not been sunk. This, of course, must be balanced against production delays, cost of repairs, and the possibility of a fatality or even a disaster, which hang over the operator's head when he has a poorly equipped shaft. The shaft performs one of the most hazardous, and perhaps the most important function in connection with a mining operation and should therefore be of the best construction justifiable in the light of full economic and accident risk considerations. The new Leonard shaft at Mt. Hope is believed to be such a structure.

Acknowledgments

The writer feels very grateful to Mr. Harry Davenport, general superintendent of the Mt. Hope mine, and to Mr. Frank Morris, mining engineer at the same operation, for their splendid cooperation and assistance in compiling data for this report, without which it would not have been possible.



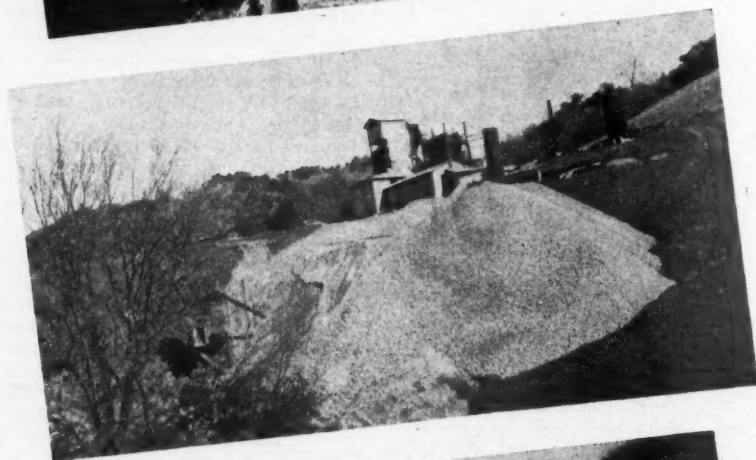
The Wandering Mercury Plant

A Story in Pictures Supplied by Worthen Bradley, President, Bradley Mining Company, San Francisco, Depicting the Typical Travels of a Small Quicksilver Recovery Unit.

This Rotary Has a Capacity of 20 to 25 Tons, Having Pipe Condensers



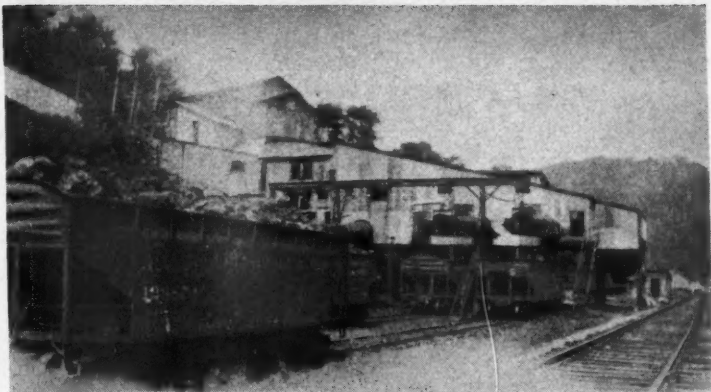
Original installation was at the Manhattan Mine, Napa County, Calif., in 1940



The plant was in operation at the Skaggs Springs Mine, Sonoma County, Calif., in 1942.
Calcine pile in foreground



The same plant with certain replacements and alterations was installed early in 1945, one mile west of The Geysers, Sonoma County, Calif. Probably the most recent such installation in the U. S., this plant was erected by Frank Dewey of the Geyser Mercury mine



Anjean tippie on the Nicholas, Fayette and Greenbrier Railroad

Mountain Outcrop Strip Mining

At Leckie Smokeless Coal Company's Anjean Mine

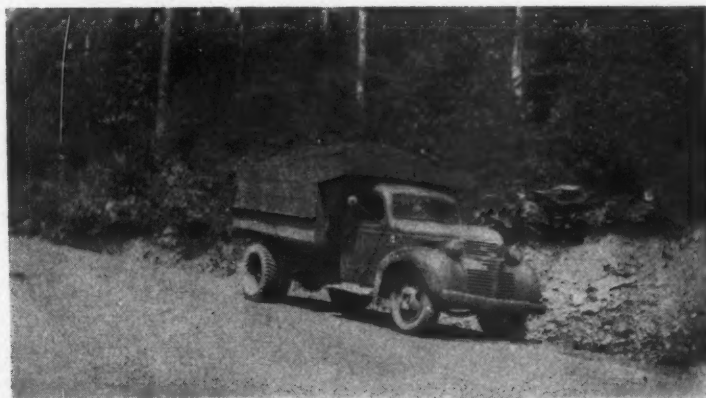
★ ★ ★

**Strip Mining Method, Formerly
Considered Highly Impractical for
This Area, Now Adds 500 Tons to
Daily Production**

★ ★ ★

By E. W. HAESSLER

Chesapeake and Ohio Railway Company
Huntington, W. Va.



On the road to the tippie. Note grade and position of truck on left or "inside" of road

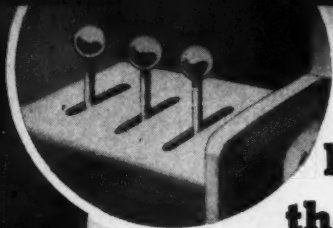
DURING the war just successfully waged by this country and its Allies, there were many instances of applied ingenuity in all industries, and this was particularly true of the coal-mining business. With manpower drained beyond any point believed possible, machinery difficult to acquire, and parts for existing machinery almost impossible to get, it became more and more difficult to deliver to the consumer the vastly greater amount of coal so necessary to the successful prosecution of the war effort. Extensive planning to combat the difficulties encountered was necessary, and often untried methods of mining were attempted and sometimes found to be the answer, or at least partially so. Among the interesting innovations was the recovery of coal by strip mining in mountain outcrops.

Local Operators at First Skeptical

While this type of mining was a going industry in some sections of the country, it was unheard of in the mountainous districts of West Virginia, and there were many who shook their heads and said it could not be done with any degree of success. As reasons for that opinion, they pointed out that the hillsides climbed too fast, making the overburden prohibitive before it was possible to get away from the badly stained and oxidized crop coal, and if the crop was taken also, the coal could not be sold in competition with other coals.

With the needed tonnage becoming harder to get every day, the management of the Leckie Smokeless Coal Company, operators of other mines as

well, decided to inaugurate this new method of mining near their deep mine at Anjean, W. Va. Working the Sewell seam of coal on one side of the valley, they had done some prospecting in the Fire Creek seam on the other side, where they had a large acreage under lease from the Gauley Coal Land Company, and the results of same had given them cause for concern. The coal showed every sign of being of such a nature that the usual dipping and rolling looked for in this seam would be tame in comparison. In deep mining the grades discovered would be prohibitive, and this, along with very bad roof conditions, made it necessary to either strip, or abandon the land as unmineable. The first effort was not too successful, and in the early part of 1942, as a result of general discussion by the

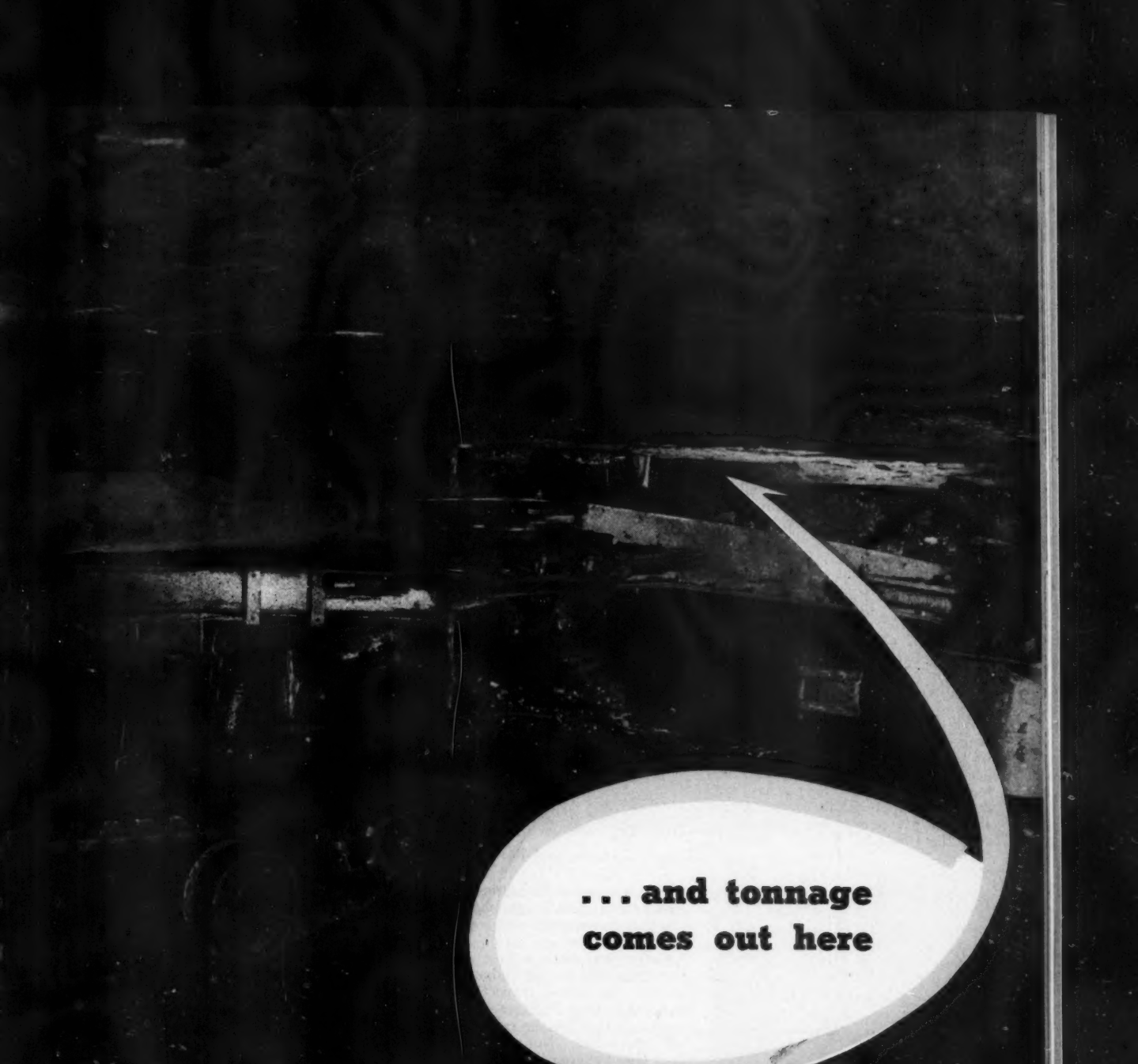


**Just push the
little levers down...
the arms go round
and round**

JOY EQUIPMENT

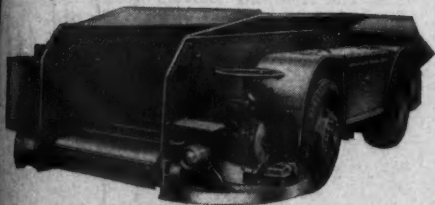
**is simple to operate
wears longer
repairs easily
produces tonnage at low cost**

JOY MANUFACTURING



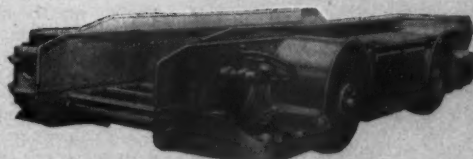
**... and tonnage
comes out here**

JOY 42" SHUTTLE CAR
Permissible Type



**The Perfect
Teammates
for
JOY Loaders**

JOY 32" SHUTTLE CAR
Permissible Type



Call in a Joy Engineer



COMPANY, FRANKLIN, PA.

heads of the Leckie Company, Johnny Jones, president of Burnrite Coal Company, of New Waterford, Ohio, was engaged to bring in his equipment and try once more.

Strip Mine Production 35 Per Cent of Output

Jones had been connected with strip mining for some years, but the Ohio field offered a level bed of coal of uniform thickness and here at Anjean there was plenty of opportunity for the most experienced strip men to get an education. With the help of the Leckie personnel, which included Chief Engineer W. W. Coleman, Superintendent T. F. Dollinger, and Chief Clerk H. T. Plunkett, the project was planned as well as the conditions would permit. In the beginning, each day brought forth its individual problems and they were to say the least, diversified. One day, the coal seam would run uphill out of the mountain, and the next it might reverse and disappear in the direction of the nether regions. One day there would be 6 ft. of clean coal, and the next might well see the seam pinched out completely. All the headaches were taken in stride, for one basic fact was evident and that was, the tonnage recovered was high quality coal, and as such, it had a definite place in the war economy. Now, the period of experimenting is completely past, and for some time the tonnage recovered through stripping has accounted for about 35 per cent of the total loaded over the tippie at Anjean. It takes



Two-yard Lima and P&H shovels load into 10-ton trucks



Thickness of the coal seam declines rapidly



The No. 855 P&H shovel has a 32-ft. boom and 27-ft. stick

little imagination to picture the position of the Leckie customers during the past few years if this coal had not been mined.

Safety has been a first consideration here, and the effort has not been wasted, for recent inspection by the Federal Bureau of Mines resulted in a commendation for the remarkable record established. Not a lost time accident has occurred in the entire life of the operation.

General Operating Considerations

The procedure used at Anjean is not novel, and although they have in a few instances taken as much as 70 ft. of overburden, the average is about 35 ft.; mostly shale, with occasional boulders. About 65 per cent is shot. A 6-in. Maxim horizontal drill is driven in about 42 ft., and the charge is 40 per cent dynamite (Dupont). After shooting, it is removed by a No. 750 Lima 2-yd. shovel, Boom 34 ft., Stick 30 ft., working in tandem with a No. 855 P&H 2-yd. shovel; Boom 32 ft., Stick 27 ft. The coal, which averages 5 ft., where mined, is loosened by drilling an 8-ft. center, and shooting with Coalite (Dupont). It

is picked up by a No. 35 B. Bucyrus Erie 1-yd. steam shovel, operated by a gentleman by the name of Robert Lee Quesenberry who deserves special mention, being 78 years of age, and having operated this same shovel on and off since 1925, when the town of Anjean was built. They are on the job every day that loading is done. He prefers to load coal six days a week and spend Sunday servicing and making repairs on his mechanical companion. This, during the period when absenteeism was synonymous with the coal-mining industry.

As the stripping shovels work three shifts and the loading shovel only one, it is sometimes necessary for one of the stripping shovels to help with the coal loading, but this occurs only when the amount of coal stripped ahead warrants it.

A Good Haul Road

Loaded into 10-ton trucks, of which there are 13 in number, the coal moves down from the mountain top via a 7 mile road to the tippie. Along this road it is possible to see where without help, nature has already begun to cover the spoil pile which is the

necessary residue of strip mining, with a growth of cherry, oak, and other vegetation, in a way that promises in a very short time to cover up the scars. Grades on the road reach as high as 11 per cent for a 2-mile stretch, and because of the excessive grade, a new traffic rule was made, whereby the loads always take the inside. As this is usually the left side of the road, a visiting driver had best make the trip up and down in a little truck operated by one familiar with the procedure used. Averaging 20 ft. in width, the road has been given a great deal of care in construction and maintenance; its base is 18 in. of crushed rock, which is covered by a 6-in. surface of "Red Dog." Well drained, and otherwise kept in perfect condition, the road is one of the best to be found at this type of operation.

Product Mixed with Deep-Mined Coal

At the tippie, the product is mixed with the deep mined Sewell seam coal, and this results in a much higher percentage of lump that would be possible with only the Friable Sewell seam. Two Kanawha Belknap chloride washers, one of which washes 1½ by 3-in. and the other 3 by 6-in. which has recently been installed, clean all the coal 1½-in. by 6-in., and these, with Link Belt shaker screens and picking tables result in a low ash product able to compete in any market. Sizes made are 1½-in. nut and slack; 1½ by 3-in. stove; 3 by 6-in. egg and 6-in. lump, and loading booms are used on all grades except the slack.

Successful coal mine planning and operation is not new to this organization, which dates back to Col. William Leckie, still fondly remembered by all who knew him. The offices in Columbus, Ohio, house the president and general manager, William S. Leckie, and Andrew Leckie, sales manager,



The coal seam at its best is well over 72 in.



New growth is already starting on the spoil pile

both sons of the Colonel, and another son, Douglas, holds forth in the Richmond, Va., office. A third generation of this family is represented in William H. Leckie, now assistant general manager, with offices in Bluefield, W. Va.

With a substantial coal reserve and

with the preparation facilities planned and installed, the future of the operation seems assured, and the first company to dare the risk of stripping coal in Greenbrier County has every reason to look with gratification at the past and with optimism at the future.

Accidents and Light

By J. L. Kilpatrick, Illuminating Engineering Department, Westinghouse Electric Corp., Bloomfield, N. J.

GENTLEMEN—the eyes have it! With about 87 per cent of our impressions visual, the eyes hold the potential crux of accident prevention. In order to avoid an accident the hazard must be seen in time for proper action.

Good lighting is an absolute necessity for accident prevention. If the man who tripped on a tool in the dimly lighted aisle had seen it in time to avoid the hazard, lost production time due to his broken leg would not have occurred.

If glare had not temporarily blinded him, that pattern maker would not have lost those fingers.

If that heavy shadow over the press had been eliminated, that worker would still have his hand.

If there had been good lighting, someone would have seen that casting slipping from the crane hook and that man would not have been killed.

Good lighting must prevent eye-fatigue, eliminate glare, both direct and reflected, minimize shadows and provide see-ability for the prevention of accidents. There are a number of light sources and innumerable lighting fixtures which, properly engineered, can provide good lighting for any specific plant. Competent illuminating engineers should be consulted

when changes in lighting are contemplated.

A good installation is not enough. The lighting system must be maintained and a depreciation factor provided. Otherwise, an installation which was quite satisfactory when installed may, in a comparatively few months, produce a lighting result which is only one-half, or even one-third, as much as the original. Poor lighting maintenance in itself produces an accident hazard.

For safety's sake—let there be light! Make sure your workers see! Remember, that light is cheap—sight is priceless!

Proposed Stockpiling Legislation

Testimony of Julian D. Conover, Secretary, American Mining Congress, Before
the Senate Committee on Military Affairs, October 30, 1945



JULIAN D. CONOVER

I SHALL devote my remarks primarily to S. 1481, which we understand has been prepared in the Bureau of the Budget following a number of conferences between interested Government departments and agencies. Certain provisions of this bill cause the mining industry serious concern, and in our judgment require amendment if the fundamental purpose of the legislation—our future military security—is to be attained.

The principle of stockpiling for national defense has, of course, the approval and endorsement of the mining industry. As brought out by previous witnesses, such stockpiles serve an important function in providing an immediate supply of strategic materials—principally minerals and metals—to meet the tremendous surge in requirements for munitions production and related industries that takes place during a war emergency. But physical stockpiles of minerals and metals are only our first line of defense. Back of them, and of even greater importance to our security, must be a sound, healthy and functioning mining industry, equipped and ready to deliver the additional quantities of minerals required for all-out war production. It is true that as to certain minerals, such as tin, which are not mined in this country, the stockpile may have to be our main reliance; but as to others, such as zinc, copper, lead, etc., as to which our own mines produce a major portion of the world's output, the demands of war time far exceed any stockpile amounts contemplated in current discussions or that are practical of attainment. Plans for our defense must necessarily be based in large measure on a continuing supply from current production—and to this end an active, "going" mining industry must be maintained. Consequently, in writing stockpiling legislation, extreme care should be taken not to jeopardize the future of our mining industry.

The purpose of stockpiling is national defense. This purpose cannot be too strongly emphasized. Stockpiles are intended to protect us against being again caught unpre-

pared, without sufficient supplies of minerals and other basic materials quickly to produce the weapons that may be needed in another war. It is fundamental that these stockpiles should be held inviolate against a future military emergency. They should be drawn upon when, and only when, this country is required to defend itself from aggression. So long as they are maintained intact, stockpiles of minerals and metals constitute a permanent, indestructible reserve—of priceless value when measured against the blood of a future generation, or against the very existence of our Nation. If their existence helps to avert another attack—if, as we all pray, we are never called upon to use them—they will have paid for themselves many times over. They are a form of national insurance, and that insurance policy should never be allowed to lapse through dissipation of these strategic reserves.

Stockpiles of minerals and other strategic materials do not, in general, become obsolete or outmoded, as does a bomber or a battleship—they are the basic materials required to produce whatever weapons a future war may require. They are the ultimate sinews of our defense.

Congress Should Retain Control

Because of their importance, Congress in the past has rightfully retained control over these stockpiles and has permitted their use only in a war emergency. Congress should retain that control in the future. No administrative agency should have the power to use or release the stockpiles without specific Congressional approval except for the purpose for which they were created. We do not for a moment believe that the patriotic and experienced men connected with the present stockpiling program would permit these reserves to be dissipated; but time passes, administrative personnel changes, and the present vivid appreciation of the needs for continued preparedness becomes dim. In the years to come those who are ad-

ministering the program may not have the same keen realization of just how zealously these stockpiles must be guarded for the Nation's safety. It is the function of Congress, we believe, to lay down a clear-cut policy for the future, and to provide safeguards against administrative changes that might result in nullifying that policy.

An exception may, of course, be made in the case of materials that become technologically obsolete for war purposes. Yet even as to such materials, Congress should be fully advised in advance as to the reasons for any intended release from the stockpiles.

The principle of Congressional control of the stockpile bears directly also on the future of the mining industry of this country, upon which we must rely for a major part of our mineral supply in an emergency. Unless the stockpile accumulations are securely locked up, with Congress itself holding the key, they will inevitably have an unhealthy and repressive effect on our mining industry. The conferring of discretionary power upon any administrative agency to liquidate portions of the stockpile must inevitably impair, if not destroy, the necessary confidence on the part of those who are responsible for operating and developing our mines. Even though such power were never exercised, the mere fact that it could be, would serve as a continuing threat, a "sword of Damocles" hanging over the mining industry and discouraging its development, expansion and long-term financing. Such a condition would seriously jeopardize the maintenance of a strong, healthy industry, engaged continually in developing new reserves and new metallurgical proc-

esses, and possessed of the equipment, organization and "know-how" that will be indispensable in another emergency.

As members of this committee are aware, the mining industry differs materially from manufacturing or fabricating enterprise. Mines cannot be moved to other locations or converted to the production of other goods. Their locations and the mineral content of their ore bodies have been fixed in long-past geologic periods. Situated frequently in isolated desert or mountain areas, the entire populations of which are dependent upon them for support, they present many problems not encountered in populous manufacturing centers.

Confidence in Future Essential to Mining Development

The mining industry is one in which long-range planning and confidence in the future are especially required. The industry must constantly be exploring for and developing new mines to replace those whose ore bodies become worked out. Frequently as much as five years is required from the inception of a mining enterprise until it gets into full production. The finding and opening up of promising deposits calls for a high order of courage, optimism, and stick-to-it-iveness, combined with judgment, technical skill and ample capital, prepared to assume the unavoidable hazards. Even in existing mines it is common that only a few years' reserves of ore are actually blocked out, and continued investment of risk capital is required to extend known reserves and to develop additional ore. Hence the industry is particularly susceptible to a condition where the adding of avoidable risks to those that necessarily must be encountered could well dry up the new development that must constantly be going on.

The Congress in its tax laws has recognized the difference between mining and manufacturing. Manufacturing converts raw materials into more valuable products through the application of labor, machinery and ingenuity, but its capital investment is not consumed in the process. A mining company literally sinks its capital into the ground, and a large portion of its net receipts represent not a return on that capital but the return of the capital itself. If conditions adverse to mining are created, not only the possible profit but the capital of the miner is placed in jeopardy.

For many decades the mining industry has been seeking out and developing hidden ore reserves through the willingness of mining investors and mining companies, large and small, to venture their capital. We may expect the industry to continue to per-

petuate itself in this manner, provided its needs are recognized and it is not subjected to the constant hazard of sudden offerings from Government stockpiles for purposes other than national defense.

The suggestion has sometimes been made that ores be conserved in the ground, with a view to extracting them when an emergency requires; but such a policy, as those familiar with mining have pointed out, largely defeats its own ends. It fails to recognize the fact that shut-down mines, caved and flooded workings, corroded and rotting treatment plants and technical and operating organizations scattered to the four winds are of little value when an emergency arises. Such a policy does not truly conserve and may in effect destroy our mineral resources. Additions to our mineral reserves are largely developed in the

process of mining, and advances in the techniques of ore finding, mining, and metallurgical treatment of lower grade and hitherto worthless deposits are made by vigorous and active mining organizations. Without such organizations and a "going" mining industry, resources in the ground would have no practical value in a national emergency—it would take too long to bring them into production.

To those not connected with the mining industry it is sometimes difficult to make our views clear. As to stockpiles, it might seem that injury to the industry would be done only in the event stockpile materials were actually thrown on the market; whereas the fact is that an actual dumping of Government-held stocks might do less harm than a continued, overhanging threat of such disposals. Even though the threat never ma-



Strategic tin ore from Bolivia and the metal that results

terialized, its existence would be an ever-present deterrent, tending to kill the initiative and to dry up the flow of enterprise capital upon which the continuation, let alone the expansion of mining activity is so dependent. As I said before, we have no thought that any of those who have actively shared the responsibility of gearing our production to the requirements of World War II, and have participated in the drafting of this legislation, would ever wish to give our industry cause for alarm; yet in the future, persons not possessed of this background—intent perhaps on some other laudable objective such as Government economy—might well fail to appreciate the necessity of keeping the stockpiles inviolate, and of preserving that confidence on the part of mining men that is essential to our "basic stockpile"—a sound and healthy mining industry. To the end that our industry may be able to serve the Nation in any future emergency as it has in the past, we again urge that you avoid any threat of disposal through discretionary administrative action, and that Congress itself retain control of the stockpiles.

Disposal Provisions Must be Carefully Drawn

There has been some discussion here as to the respective provisions of S. 752 and S. 1481 insofar as they provide direct aid or encouragement to the mining industry. It was indicated that there is little difference between the two bills in that respect. However, we are now looking at them from the standpoint of whether, through these disposal provisions, they will or will not do harm to the mining industry. We are not seeking special favors or subsidies of any kind, but we do want to be very sure that

this legislation does not hurt the mining industry nor jeopardize its future.

The original stockpiling law, sponsored by Senator Thomas of Utah and approved June 7, 1939, recognized these principles in the following provision:

"Sec. 4. Materials acquired under this Act except for rotation to prevent deterioration shall be used only upon the order of the President in time of war, or when he shall find that a national emergency exists with respect to national defense as a consequence of the threat of war."

S. 752, introduced by Senator Thomas on March 16 of this year, likewise provides, in Section 7, for locking up the stockpile against a war emergency, with Congress retaining the key.

S. 1481, on the other hand, provides, in Section 4, for a considerable range of administrative discretion in releasing materials from the stockpile. It permits the sale of such materials at any time when an "excess" is created by a "revised determination" by the administrative agency. These provisions raise all the objections which we have pointed out. Any "revised determination" that would involve the disposal of strategic materials also involves questions of basic policy which we believe should be referred to the Congress. We believe this section should be amended as follows (deleting the material shown in brackets [], and inserting the material italicized):

Sec. 4. The stockpiles shall consist of all such materials heretofore purchased or transferred to be held pursuant to this Act, or hereafter transferred pursuant to section 6 hereof, or hereafter purchased pursuant to section 5 hereof, and not disposed of pursuant to this Act. Except for the

rotation to prevent deterioration and except for the disposal of any material [which is no longer required to be stockpiled for common defense pursuant to revised determinations under section 2 hereof] pursuant to subsection (b) hereof, materials acquired under this Act shall be released for use, sale, or other disposition only (a) on order of the President at any time when in his judgment such release is [in the interest] required for purposes of the national defense, or (b) in time of war or during a national emergency with respect to national defense proclaimed by the President, on order of such agency as may be designated by the President.

(b) Materials acquired under this Act [shall be disposed of under a revised determination made pursuant to section 2 hereof] as to which a revised determination has been made pursuant to Section 2 hereof by reason of a finding by the President that such materials have become obsolescent for use in time of war owing to technological changes shall be disposed of only after the submission to the Congress of a report setting forth the reasons for finding such material to be obsolescent and after the publication in the Federal Register of a notice of the proposed disposition. Such notice shall state the amounts of the material proposed to be released, the plan of disposition proposed to be followed, and the date (not earlier than six months after the submission of such report and the publication of such notice) upon which the material is to become available for sale or transfer. The plan and date of disposition shall be fixed with due regard to the protection of the United States against avoidable loss on the sale or transfer of the material to be released, and the protection of producers, processors, and consumers against avoidable disruption of their usual markets. No material constituting a part of the stockpiles may be disposed of under a revised determination for reasons other than obsolescence except with the express approval of the Congress.

As thus amended the section follows the principle established in the original 1939 Act, that stockpile materials be held exclusively for national defense purposes. It eliminates, however, the original requirement that before the materials can be used the President must find that there is a "threat of war." With these amendments we believe that the administrative officers will have all the flexibility needed for the purposes of the Act. Materials which become obsolescent for war purposes by reason of technological changes may be disposed of following suitable public notice (which should not be less than six months) and submission of a full



Zinc ore for munitions production starts on its way



American mines supplied unprecedented amounts of copper to help win the war

report to the Congress (which can, if desired, be confidential in whole or in part). Otherwise, all stockpile materials must be held for purposes of national defense except as Congress specifically authorizes their release.

We also suggest certain further amendments of a clarifying or technical nature. One of these provides that transfers of materials to the stockpiles should be withheld only in the case of actual deficiencies in civilian requirements within a reasonable period. Following such period it is anticipated that wartime controls will be removed and normal markets reestablished, obviating the need for any further withholding of transfers to the stockpile.

Two of the others are designed to meet the situation created by removing the stockpiling provisions from the Surplus Property Act. The amendments make it clear that strategic materials which should be transferred under Section 6 of S. 1481 should not be held or otherwise disposed of by the owning agencies when they in fact become surplus to their needs.

"Buy-American" Clause

We have spoken of those provisions of S. 752 and of the Act of June 7, 1939, which pertain to the release of stockpile materials, and which retain control in the hands of Congress. May we invite your attention also to the "Buy-American" provisions con-

tained in both S. 752 and the original 1939 Act, but omitted in S. 1481 which provides specifically that purchases shall be made without reference to the "Buy-American" statutes. It is our understanding that the language of Section 5 (b) of the Thomas bill, S. 752, was taken directly from a provision which was common to the various drafts of a stockpiling bill prepared last year by the interested Government departments. We believe the viewpoint then expressed was sound, and that a suitable "Buy-American" clause should be incorporated in the pending legislation.

There are other aspects of stockpiling legislation which are of considerable interest, but which times does

not permit us to discuss. We have tried to emphasize the most important point—that if the stockpiles are made subject to discretionary disposition for other than defense purposes, this legislation will largely defeat its own ends. For the limited stockpiles that it is practical to accumulate we will then have jeopardized our main line of defense—a healthy and "going" mining industry. We cannot emphasize too strongly that Congress should retain the key to the stockpile; and with the amendments we have urged, we believe this legislation will accomplish its purpose, and will permit the continuance of a vigorous producing industry, prepared to do its part in national defense.



Open-cut quicksilver mine in Nevada

Simultaneous Cutter and Loader For Longwall Mining



Fig. 1. Drawing of the loader in operating position at the face

A MACHINE known as the Meco-Moore power loader for coal mining, which cuts and loads without the use of explosives, is in successful operation in England. It is the result of considerable experimentation, the first design, produced in 1934, indicated that the idea was practicable and improved designs followed until the latest model was evolved as described here. This was installed in a seam 4 ft. 9 in. high in May, 1944, and worked every day thereafter for 7½ months until it was brought to the surface in January, 1945. During that period it loaded 48,000 tons of coal without the loss of a single cut and a thorough examination disclosed all parts to be in excellent condition.

Method of Operation

The machine is adaptable only to long-face mining; it cuts and loads in one continuous operation, moving along the face by ropes similarly to a shortwall. In brief, it consists of two superimposed horizontal cutter bars set at right angles to the face, one cutting at the bottom and one in the

Abstract of a paper read before the Institution of Mining Engineers at the Annual General Meeting held at Nottingham, England, July 18, 1945.

English Machine Successfully Cuts and Loads in One Continuous Operation

By || T. E. B. YOUNG
and
W. H. SANSOM

middle of the seam and a vertical shearing arm which cuts parallel to the face and across the back ends of the horizontal kerfs. The coal which is under some roof pressure is loosened by these three cuts and falls onto a short conveyor, which in turn loads onto a belt conveyor laid parallel to the face. (Figure 1 shows the machine in loading position.) When the end of the face is reached, the machine is turned around and works back in the opposite direction.

The general layout with the location of the various machines and conveyors is shown diagrammatically (and not to scale) in figure 2. The overall length of the face is 130 yds. but in order to provide starting room for the cut-

ter-loader, two stalls or entries are driven, one at each end of the face, and kept some feet in advance. The stall at the left end is 15 yds. wide, cut by an ordinary shortwall and loaded by hand onto a short conveyor; the one at the right end is 4-yds. wide, cut by a Sullivan "Buddy" shortwall and loaded by hand onto the belt face conveyor. Between these two stalls is the main face about 110 yds. long which is operated by the cutter-loader.

Description of Machine

This consists of a standard Anderson-Boyes longwall chain-cutter with a 50-h.p. motor and standard undercutting arm 6-ft. 6-in. long and also

an overcutting arm of similar design 5-ft. 6-in. long fitted to and driven through a gear-box superimposed on the gearhead end of the machine. Mounted on the cutting-machine body is another 50-h.p. motor which drives (through a suitably arranged detachable shaft) the loader and shearer portions of the combination. The loading member consists of a frame set at right angle to the machine body within which is mounted an endless rubber belt fitted with steel slats. Each slat has lugs attached at its ends which engage sprockets on the driving-shaft. Mounted on the face end of the loader frame is a shearing arm of triangular form driven by means of a detachable shaft. The complete assembly in operating position is illustrated in Fig. 1.

Immediately in front of, and in line with, the conveyor frame is a "riffle" bar fitted with picks set in double-helical form. As the bar rotates, these picks lift the bottom coal and transfer it to the loader belt and also help break the bottom coal into suitable size for loading. Fitted to the side of the loading belt is a conveyor of the paddle type or a combination of paddle and worm type to remove the machine cuttings; these are discharged through an aperture on to the face conveyor belt. The haulage-drum is slightly larger than normal in order to accommodate a length of 40 yds. of rope of 5-in. dia. A brief specification of the machine is as follows: Weight, 10 tons; height, 3-ft.; length, 16-ft.; width, 3-ft. 1 in.; power units, 2 motors of 50-h.p.

Method of Roof Support

The roof at the coal-face is supported on corrugated-steel bars each 7 ft. in length set at intervals of 4½ ft. on two steel props of 5 x 4½ in. H-section with softwood caps 3 to 4 in. in thickness, between props and bars. As explained earlier, there are two horizontal cutting-bars; the top cut is to a depth of 5½ ft. while the bottom cut is 6½ ft. deep. Thus as the machine goes along, 5½ ft. of coal is loaded out but the face wall is left undercut to a depth of 1 ft.; this has been found advantageous in permitting a slight roof bend and preventing roof breaks which occurred on a solid coal face. This cut coal is supported by means of sprags set at approximately 6-ft. intervals.

Labor for Face Operation

The work is done on three shifts, with all coal loading from the face and stalls on the day shift. The cutter-loader machine crew consists of six men employed as follows: (a) one operator in charge of the team; (b) one assistant operator cleaning up in front of the machine, taking out sprags, attending to cables, and assisting to move up; (c) one man behind the machine, breaking up large coal when necessary; (d) one man setting temporary jack-props, putting in sprags, and cleaning up spillage; and (e) two men setting permanent roof supports.

The stalls are driven by five men in

two crews, cutting by machine and loading by hand onto the conveyor; three men advance the left hand stall while two men drive the right hand stall. The deadwork is done on the afternoon and night shifts and includes moving the conveyors, turning the cutter-loader around, rock brushing, building pack walls, setting permanent timbers, changing the cutting picks, lubricating, inspecting and repairing all equipment.

The total labor force per day consists of 36 men as listed below who advance the face for its entire width of 130 yds. to a depth of 5½ ft. producing an average of 324 tons. The two stalls driven by hand produce around 54 tons so that the cutter-loader production averages 270 tons per face cut. The average time for the machine to load out across the face is from 6 to 7 hours but when stoppages are deducted, the actual operating period for the machine is a little more than 4 hours—about 60 per cent of the shift.

LABOR FORCE PER DAY—3 SHIFTS

	Men
Working on cutting-loading machine	6
Advancing right-hand stall	2
Advancing left-hand stall	3
Timber supplies	2
Face-conveyor motors	1
Turning machine round	2
Packing, chocking and recovering timbers	7
Erecting and dismantling conveyors	4
Ripping	9
Total	36
	Tons
Average daily output	324
Output per faceman shift	9

Conclusions

A substantial saving has resulted in the number of men employed to produce the same tonnages with hand loading but there is another important point here to note. The work involved for all men, with the exception of those driving the stalls, is much less laborious than in hand loading, particularly at this colliery where high outputs per loader are obtained. This has made it possible to employ men in the team who have been good colliers but through age, illness, or accident are no longer capable of keeping pace with other more active men. The lighter work, coupled with the fact that the men are now working as a small team, has resulted in a reduction of absenteeism which is very striking, and, curiously, the deadwork performance is also much better than the average for the pit. Other advantages are: the number of accidents is reduced; supervision is easier; shot-firing is eliminated, except in stalls; timber recovery is facilitated; fewer props and bars are lost in the gob; the face is kept straight, giving better roof action; yield from a given length of face is higher; and there is a substantial saving in labor costs.

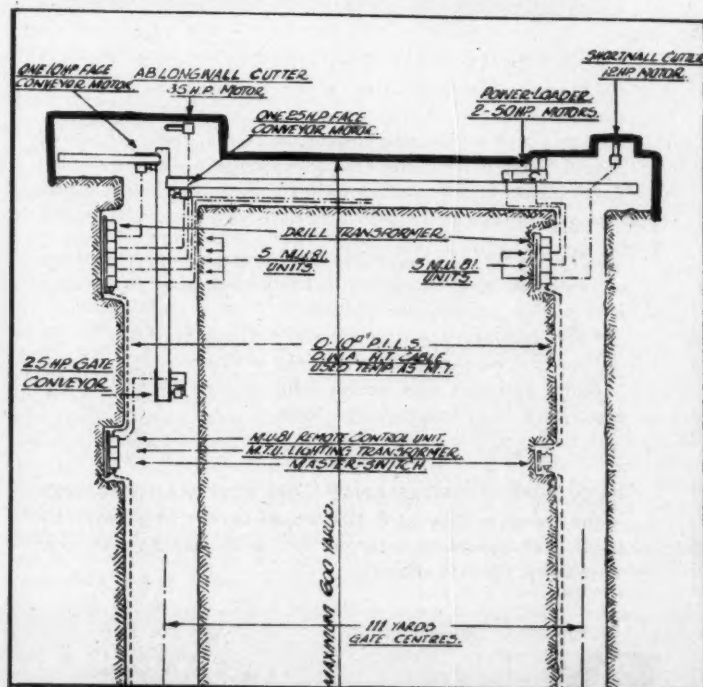


Fig. 2. Mining plan and arrangement of face equipment



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WHEELS OF GOVERNMENT

CURRENT Administration activity is centering on the many work stoppages brought on by demands for wage increases. The President's Executive Order of October 30, although accompanied by the assertion of his desire to maintain the "hold the line" price policy, actually removes Government controls over wages. With WLB's approval, wage increases to meet living costs, to correct inequities between plants, and to aid in recruitment of manpower for industries essential to reconversion, are immediately subject to consideration by OPA for price increases. In the case of other wage increases the employer may at a later time request WLB approval or may wait six months and then apply to OPA to take the wage increase into account for pricing purposes.

The President's action was apparently taken in the hope of removing the wage issue from the discussions of the management-labor conference now under way in Washington. In opening this conference the President addressed the management and labor delegates, telling them that strikes cannot be allowed to slow the drive toward high peacetime production. He asked the participants to bring forth as the remedy open-minded collective bargaining, use of impartial settlement machinery in case bargaining fails, and pledges of responsibility and integrity on both sides in living up to agreements.

Thus far the Revenue Act of 1945 is the only measure in the President's program of September 6 which the Congress has sent to the White House. Despite Administration effort the Unemployment Compensation Bill for war workers remains in the Committee on Ways and Means, and action has been slow on the Wagner-Murray "Full Employment" bill, as well as on the requested increase in minimum wages, reorganization of Government agencies, permanent status for FEPC and retention of USES.

Excess-Profits Tax Repealed

As enacted, after a lively Senate-House conference tussle, the Revenue Act of 1945 repeals the excess-profits tax December 31, 1945, and retains for another year the carry-back provisions. The corporate normal and surtax is set at 38 per cent for incomes above \$50,000; a reduction of 4 percentage points applies to incomes below \$25,000, and a "notch" provision is included for the \$25,000-\$50,000 income range. The bill repeals the capital stock tax and declared value excess-profits tax. For individuals, income exemptions of \$500 a person are granted against the 3 per cent normal tax, and surtaxes are reduced by 3 percentage points in each bracket with a 5 per cent flat reduction applying to the total tax. The \$5 automobile use tax is repealed and the Social Security payroll tax is again frozen at 1 per cent each on employers and employees.

The Senate version of the bill differed from the House measure (described in our previous issue) by completely repealing the excess-profits tax at December 31, 1945. The House had reduced the tax to 60 per cent for 1946 with repeal in 1947. In the case of the corporate normal and surtax rate the Senate had permitted the rate to remain at 40 per cent whereas the House had cut it to 36 per cent.

Stockpiling Hearings Held

Hearings have been completed and a report is now being written on the legislation for stockpiling critical and strategic materials. The Military Affairs Subcommittee, under the chairmanship of Senator O'Mahoney of Wyoming, on October 30 received testimony on the original Thomas-May bill, S. 752; the Administration bill, S. 1481, which Senator Ed Johnson of Colorado introduced at the request of the Departments; and Senator McCarran's bill, S. 1522, which calls for the complete freezing in a national defense reserve of all such materials now owned by the Government.

Washington Highlights

WHITE HOUSE: Wrestles with wage-price problem.

CONGRESS: Activity lags as early adjournment fades.

TAX: Excess-profits tax repealed December 31, 1945.

STOCKPILING: Senate hearing completed.

DISPUTES ACT: Bill would eliminate strike votes and plant seizures.

"FULL EMPLOYMENT": Compromise measure in prospect.

MINIMUM WAGE: Pepper bill meets strong opposition.

GWYNNE BILL: Reported. Limits suits to one year.

SILVER: McCarran's \$1.29 bill and Green Act extension in committee.

The Administration measure sets up a Strategic Materials Stockpiling Board consisting of a chairman, to be selected by the Government agency designated by the President to administer the program, and the Secretaries of State, Treasury, War, Navy, Interior, Agriculture, and Commerce. The President is authorized and directed to determine from time to time (1) which materials are strategic, (2) quality and quantities of such materials, and (3) the date by which such quantities should be acquired. It provides that the stockpiled materials shall be released (a) on order of the President at any time when in his judgment such release is in the interest of the national defense, or (b) in time of war or during a national emergency proclaimed by the President on order of such agency as may be designated by the President. Materials in excess of any revised determinations would be disposed of upon publication in the *Federal Register* of a notice of the proposed disposition.

It will be remembered that the Thomas-May bill requires that such materials are to be held exclusively for use in any future emergency, except (1) for rotation, (2) by reason of obsolescence for war use due to technologic changes (in which event six months' notice to Congress of intended disposal is required), or (3) under specific authorization of Congress. Another major point in which the Administration bill differs from the Thomas-May measure lies in the purchase of additional materials for stockpiles, *without regard to the "Buy-American" Act.*

The Military Affairs Subcommittee took testimony from C. K. Leith of WPB, Elmer W. Pehrson of the U. S. Bureau of Mines, Alan M. Bateman of the Foreign Economic Administration, Commodore Lewis L. Strauss of the Navy, Col. William H. Hutchinson of the Army, Harold Stein of the Office of War Mobilization and Reconversion, who presented a statement from Director John W. Snyder, Richard H. Templeton, Jr., of the Bureau of the Budget, and J. Carson Adkerson of the American Manganese Producers Association.

Appearing for the American Mining Congress, Secretary Julian D. Conover registered strong objection to those provisions of the Administration bill which fail to assure the integrity of the stockpiles as a defense reserve and thus inevitably do serious damage to the mining industry and its future development. He offered a number of specific amendments to the bill, stressing that materials in the stockpile should not be released for purposes other than the national defense without express approval of Congress. The only exception would be as to materials becoming technologically obsolete, as to which a full report should be made to the Congress and notice of the proposed disposition published at least six months in advance. He also asked that the "Buy-American" provisions of the Thomas-May bill and of the original Thomas Act of 1939 be retained in the Administration measure. Mr. Conover summed up the position of the mining industry by telling the subcommittee that in the event there is to be a stockpiling law, it is imperative that its provisions protect the most important source to the national defense of many strategic metals and minerals—a vigorous and "going" mining industry (see pages 44-47).

Smith-Connally Act Repealed?

The country's aggravated strike situation has brought action on Representative Howard W. Smith's (Dem., Va.) bill, H. R. 3937. The measure has been reported in a rewritten version, repealing the requirement that the National Labor

Relations Board take secret strike ballots, and removing the power of the President to take over strike-bound industrial plants. Amendments have been added to prohibit labor unions from contributing to political campaigns; also suspending for one year the bargaining-agent rights in case a union strikes in violation of a no-strike clause in its contract. Unions are likewise made subject to action for damage in Federal courts by parties injured as the result of a breach of contract. The bill has not been given a rule for House floor consideration, and it may be further amended to define clearly the position of foremen and other supervisory employees as the representatives of management under the National Labor Relations Act. This need has arisen because of the reversal of the Maryland Drydock decision in the Packard Motor Car Company case.

This issue over the unionization of supervisory employees was the announced cause of a serious bituminous coal mine strike during September and October which spread through Pennsylvania, Virginia, West Virginia, Kentucky, Ohio and Indiana. The strike began with UMWA District 50's supervisory employees' union demanding recognition. As the strike spread many thousands of miners ceased work as compared with the few hundred of supervisory employees involved; in fact, there were a number of instances where the supervisory employees never left their work at all while the miners remained away from the mines and are reported to have engaged in the picketing of other coal mine properties. The parent UMWA quickly abandoned all pretense of nonaffiliation with the supervisors' union and negotiated with the Bituminous Coal Operators' Negotiating Committee for a settlement. Suddenly on October 17 UMWA John Lewis called off the strike, apparently because of disaffection in the parent union's ranks, but stated that "future efforts to abate this controversy will be resumed at a later and more appropriate date."

The case brought before the National Labor Relations Board by the supervisory employees of the Jones and Laughlin Steel Corporation's coal mines, demanding recognition of their union for collective bargaining purposes, is now in the hands of the Board. Testimony, oral argument, and briefs are completed and the Board's decision is now believed to be a matter of weeks.

"Full Employment"

Although the President's "Full Employment" bill was finally passed by the House in amended form, as discussed in our October issue, its legislative course has continued to be

exceedingly rocky. Representative Carter Manasco's (Dem., Ala.) Committee on Expenditures in the Executive Departments has conducted prolonged hearings on the measure, and was charged by the President in his October 30 speech with obstructing the progress of the bill. The White House has since indicated that it will compromise on the measure's provisions, and Manasco's ranking committee member, Whittington of Mississippi, has stated that a milder form, providing for studies and reports to Congress on the labor force and jobs therefor, may be approved by the committee.

Minimum Wage Bill

Hearings have continued before Senate and House Labor Committees on bills to increase the minimum wage, provided in the Fair Labor Standards Act, from the present rate of 40 cents an hour to 65 cents, with automatic increases to 70 cents one year after enactment and to 75 cents two years after enactment. A dangerous feature of the bill by Senator Pepper of Florida is the provision which would permit the Wage-Hour Administrator to fix wage rate structures by establishing differentials "between inter-related job classifications"; this has met with a heavy barrage of opposition from representatives of industry and has been criticized by representatives of AFL as interfering with bona fide collective bargaining.

Witnesses representing various industries have testified in opposition to the proposed increases in the minimum wage, and have urged amendments to provide that work time shall include only time spent by employees in productive labor, exclusive of travel time to and from the place of work; also that provisions be included that no one be subjected to liability for any act done or omitted in conformity with any regulation or interpretation issued by the Administrator; and that any claim for liability under the Act may be compromised, settled or released by agreement, at any time. For the International Union of Mine, Mill and Smelter Workers, Reid Robinson declared that increase in the minimum wage to 75 cents an hour is needed in certain "sore spots" in metal and non-metallic mining districts and in isolated smelters and refineries. Hearings are continuing in desultory fashion and Acting Chairman Ramspeck (Dem., Ga.) of the House Labor Committee has stated that in his judgment the members of the House will not approve the initial increase of 25 cents per hour contemplated in the pending bill.

Continued on page 64)



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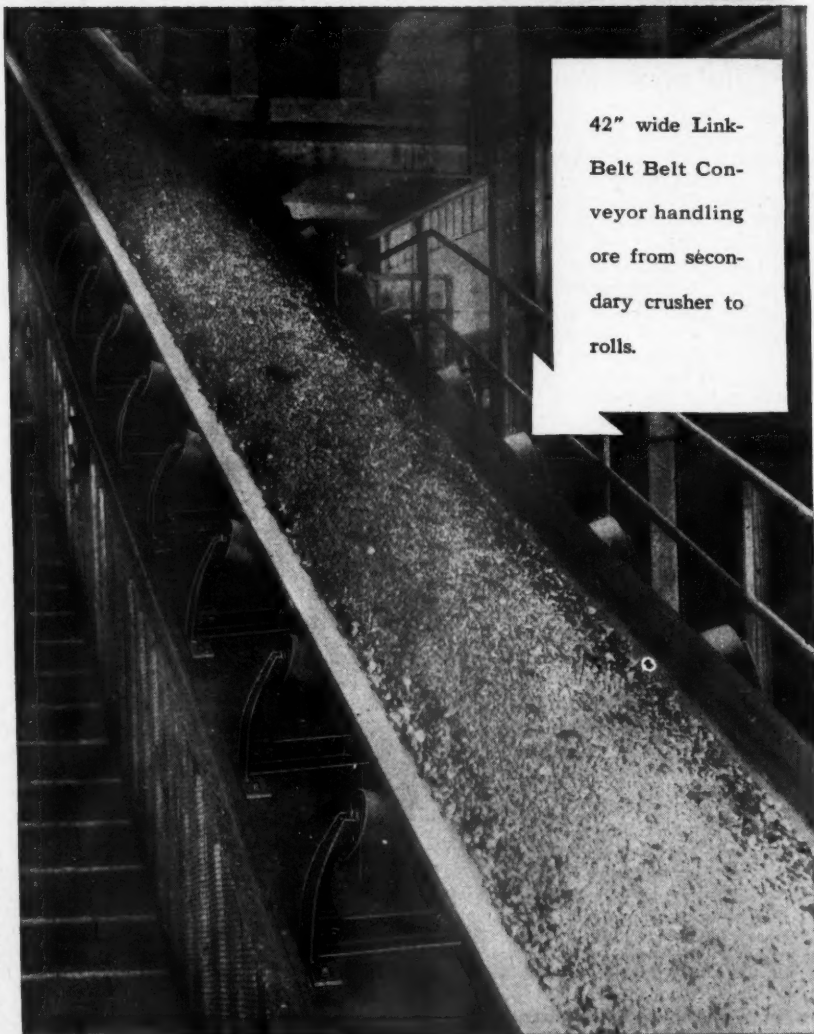
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Personals

W. F. Netzeband, mining engineer for the American Zinc, Lead and Smelting Company, recently returned to Joplin, Mo., from New Mexico, where he has spent several months doing geological work for his company in the Silver City mining district.

S. A. Miller, of Monongahela, Pa., assistant to the production control manager for the Pittsburgh Coal Company, was recently granted a leave of absence to serve the United States Government as a coal cleaning advisor to the Chinese government. His job is to help the Chinese government improve the coal cleaning equipment operations in Central China, where the ash content of the coal must be reduced for the production of coke and power.

Dr. Warren J. Mead, of the Massachusetts Institute of Technology, recently on leave of absence to serve as director of Reynolds Research, Glen Cove, Long Island, has returned to full-time duties as head of the department of geology of Massachusetts Institute of Technology. He will continue, however, to act as research consultant for the Reynolds Metals Company.

R. S. Weaver recently resigned his position as mine superintendent for the U. S. Gypsum Company, at Gypsum, Ohio, to join the staff of United Clay Mines Corporation, Trenton, N. J., as chief engineer.

W. L. Osborne has been promoted to the position of general manager for the Algoma Coal and Coke Company of Algoma, W. Va., according to an announcement by Wm. Beury, President.

John L. G. Weysser, chief, Coal Section, Mining Division, War Production Board, tendered his resignation immediately following V-J Day to become effective early in September. Mr. Weysser has not announced his plans for the future but he will stay in Washington for the time being.

Election of Thomas J. Hilliard as Vice President in Charge of Sales of Carnegie-Illinois Steel Corporation, effective October 1, is announced by J. L. Perry, president of this United States Steel subsidiary. Mr. Hilliard has been General Manager of Sales since 1938.

He will be succeeded by J. Douglas Darby, who has been Manager of Sales for the Company in Philadelphia since 1939.

John W. Howe, who has been general superintendent of the Block Coal



and Coke Corporation and the Tennessee Jellico Coal Company for the past 28 years, retired as of August 1.

Marcus Kerr, who has been chief of the Division of Mines and Mining in Ohio, resigned as of September 1. Appointment to this post is made by the Governor of the state for a 6-year term.

Several small mines in the Coeur d'Alene district have changed management recently. Charles R. Garrett, Jr., has been named manager of the Spokane-Idaho mine on Pine creek, and has increased the capacity of the mine and mill to 400 tons of concentrates per month; Compton White, Jr., has been named manager of the Whitedelf mine at Clark Fork; Frank H. Mitchell, formerly with the White Knob mine at Republic, Wash., is the new manager for the Highland-Surprise mine on Pine Creek, and J. V. Grismer, mine manager for the Callahan Consolidated mine in this district, is the new manager for the Merger Mines corporation.

L. H. Gegenheimer, after a four-year leave of absence on war duty in Washington, is back with The Timken Roller Bearing Company, Canton, Ohio, in his former capacity as sales engineer in the industrial division.

Howard Herder, fuel engineer for the Sahara Coal Company, has arrived in Europe on a special mission for the U. S. Government. He left Washington July 29 by plane and arrived in Paris after two stops, one at Newfoundland and the other at the Azores. He now makes his headquarters in Frankfurt, Germany, where he has started his investigation of foreign problems of fuel and combustion for the government.

Comdr. George W. Moyers, USN(R.) recently discharged, has resumed his duties as Sales Manager of International Minerals & Chemical Corporation's Phosphate Division. Comdr. Moyers will be in charge of domestic and export sales.

George B. Dick, president of the Dick, Gordon and Butte Valley Coal Company, with offices in Walsenburg, Colo., was recently appointed to the Colorado State Planning Commission Committee on Minerals, Oil and Mining Development.

American Steel and Wire Company has announced two major promotions in its Chicago sales office. H. A. Squibbs, formerly assistant general manager of sales in Chicago, has been made assistant to sales vice president, and C. T. Gilchrist has been promoted to succeed him.

Mr. Squibbs, a native of Canada, has been associated with the company and one of its predecessor companies since 1895 when he started as a clerk in Joliet, Illinois.

Mr. Gilchrist is a native of Cleveland, Ohio, and has been associated with the company since 1907 when he started to work as a cashier's clerk.

Howard H. Utley, of Baxter Springs, Kans., local manager and second vice president of the St. Louis Smelting & Refining Company, retired recently as head of the company's Tri-State operations.

Fred Heien has been appointed superintendent for the Forsythe-Carterville Coal Co., Carterville, Ill. He has been in charge of office work for several years.

Erwin C. Hoeman, who has been chemical engineer with the U. S. Bureau of Mines at Rolla, Mo., has become a research engineer at Battelle Memorial Institute, Columbus, Ohio.

H. F. McDonald, formerly vice president, Bell & Zoller Coal & Mining Co., Chicago, has been named president of the company succeeding **D. H. McMaster**. **E. L. Carr**, who has been assistant to the president, has been made vice president.

Irving G. Irving, who has been directing the operations of Quartz Hill Leasing Company near Butte, Mont., has left to become mining engineer for the Copper Division of the War Production Board.

Francis C. Lincoln has returned to Rapid City, S. Dak., from work he was conducting for the U. S. Bureau of Mines in Platteville, Wis. He now becomes examining engineer for the Black Hills region.

G. B. Crews, who was formerly in the engineering department of the Union Colliery Co., at Dowell, Ill., was recently made assistant to the superintendent.

Leo J. O'Neill was recently appointed to the position of assistant superintendent for the Phosphate Mining Co., at Nichols, Fla.

William L. Batt, vice chairman of the War Production Board and president of S. K. F. Industries, Inc., has been reelected chairman of the board of the American Management Association.

E. Perry Holder, of New York, was elected president of the Colorado Fuel and Iron Corporation at a board of directors' meeting October 25 at which formalities of the corporation's merger with the Wickwire-Spencer Steel Company were completed.

Mr. Holder was formerly president of Wickwire-Spencer. He succeeds **W. A. Maxwell**, who retired at his own request, company officials said.

Charles Allen, Jr., head of Allen & Co., New York investment firm, was elected chairman of the board.

Wickwire-Spencer officers elected to vice presidencies were **R. T. Dunlap**, **Franklin Berwin**, **A. G. Bussman** and **A. C. Bekaert**, all of New York.

T. G. Ferguson, formerly superintendent of the Montour No. 4 and Henderson mines, for the Pittsburgh Coal Company, has been appointed division superintendent in charge of eight mines and two preparation plants. **E. C. Skinner**, who was staff assistant to the production manager, was made superintendent of the Montour No. 4 and Henderson mines, succeeding Mr. Ferguson. **W. K.**

Lambie, superintendent of the Somers mine, has taken on additional duties as superintendent at Mongah.

Trowbridge A. Warner has been appointed sales manager for the Hendrick Manufacturing Co., Carbondale, Pa., as of October 1, according to an announcement by **K. H. Colville**, president.

Joseph B. Patton has been appointed manager of industrial relations for Oliver Iron & Steel Corporation. Mr. Patton was previously associated with Carnegie-Illinois Steel Corporation, the Union Pacific Railroad and American Ever-Ready Battery Company. He spent 21 years with Carnegie-Illinois.

W. A. Haslam, general manager of Marianna Smokeless Coal Company, Marianna, W. Va., has announced the promotion of **William Francis Diamond** to superintendent of Mine One and **David Cexton Sizemore** to superintendent of Mine Two, effective November 1.

Dr. M. F. Coolbaugh has resigned as president of the Colorado School of Mines after having completed 20 years in that position September 1. His resignation is effective January 1, 1946, although he will remain after that time if a successor has not been selected.

Paul H. Shaeffer has been appointed Cleveland district manager of the Vanadium Corporation of America. This is a new office created to service the Cleveland and Detroit districts of the corporation.

Mr. Shaeffer will make his headquarters in the Union Commerce Building with the Cleveland-Cliffs Iron Company, who will continue as agents for the Vanadium Corporation of America.

William R. Jarvis, after many years of service to his company and to the mining industry, is retiring from his connections with the Sullivan Machinery Company. He will make his home at Claremont, N. H.

Effective as of November 1, 1945, **Henry B. Van Sinderen** resigned as president of Callahan Zinc-Lead Co., and was elected chairman of the board of directors.

At the same time **Joseph T. Hall** was elected president and director of the company. Mr. Hall was executive vice president and a director of the company at the time of his entry on active duty with the Army in May, 1942. He was recently released from active duty as a major.

The appointment of **Guy J. Coffey** as Vice President in Charge of Sales of the Chicago Pneumatic Tool Company was announced recently by **W. Luther Lewis**, Executive Vice President.

Mr. Coffey joined the company in 1933 as a salesman in the Philadelphia branch, next being advanced to the Cleveland office, and finally to Manager of the West Coast office.

Hercules Powder Company has announced that **John J. B. Fulenwider** and **J. B. Johnson** have been elected directors of the company.

— Obituaries —

Philip Wiseman, 79, mining engineer associated with the development of copper properties in the West and in other countries since 1892, died September 29 at Los Angeles. He had been active until recently in mining interests which had taken him to Mexico and Central and South America. After early enterprises in Montana and in Arizona, where he was manager of Shannon Copper Company, he joined **Seely W. Mudd** in 1907 in acquiring and developing what later became the Ray Consolidated Copper Company.

John X. Farrar, 56, assistant secretary and advertising manager of The Jeffrey Manufacturing Company, died

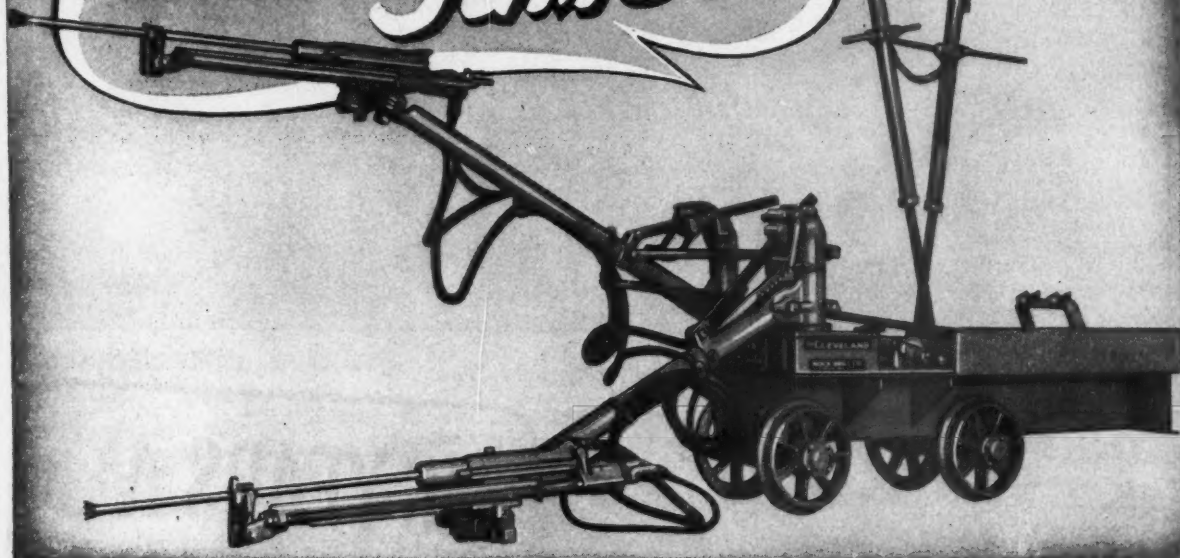


unexpectedly, October 11, in Columbus, Ohio. He had been associated with the company for 32 years. Mr. Farrar was a past president, director and one of the founders of the Central Ohio Industrial Marketers, a chapter of the National Industrial Advertisers Association.

C. A. Young, Manager Sales, Hot Rolled Products Division of Sheffield Steel Corporation, died suddenly from a heart attack at his hotel in Lafayette, Indiana, September 15th.

He had just arrived from Chicago, where he had spent a week in conference with the Committee on Proposed Deformed Specifications, American Iron and Steel Institute, of which he was chairman. At this meeting he was also elected chairman of A.I.S.I. Committee on Reinforced Concrete Research.

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- 3 No heavy lifting or straining, as encountered when operating drifters on columns or shaft bars.
- 4 Greater safety—no blocks to loosen up. Drifter can't fall—no smashed hands or strained backs.
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We can also furnish, if desired, a car for the Jumbo that is unexcelled as a time and money saver. Note these outstanding features: 1. All standard gauges obtainable. 2. Convenient bit and tool boxes and steel racks. 3. Mounting provided for flood light, which can be included at small additional cost. 4. When drifters are sold with the rig, water and air hoses are included for connecting manifolds to the machines. 5. Car includes 18" spoke type wheels, equipped with Timken roller bearings. 6. Prompt delivery of this equipment, with required priority.

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Butte, Mont.	Los Angeles 11, Calif.	San Francisco 3, Calif.
Denver 2, Colo.	Newton Highlands 61, Mass.	St. Louis 3, Mo.
El Paso, Texas	New York 6, N. Y.	Wallace, Idaho
Ironwood, Mich.	Philadelphia 30, Pa.	Washington 5, D. C.

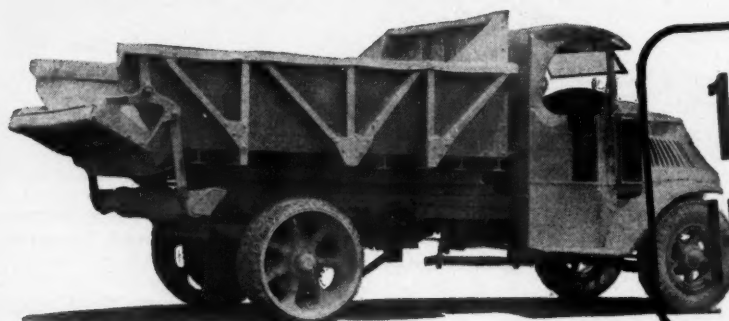
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HARD LABOR!**

Down in the rock quarries of the Edward Balt Company of Hartford, Connecticut, you can see three Mack trucks bearing up under a daily beating with typical Mack sturdiness.

Loaded by steamshovel, these trucks haul capacity loads from quarry to crusher, a distance of 1,500 feet, on an average of 25 times a day.

Two of the three are LMSW-Ms models of recent

delivery. The third, an old 7½-ton Mack, has been on the job since 1929. Sixteen years at hard labor on the rockpile and still going strong!

The records of American business for the last 45 years are full of similar instances demonstrating that, for endurance, for performance, for all-around efficiency, you can't beat a Mack.

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TRUCKS

FOR EVERY PURPOSE
ONE TON TO FORTY-FIVE TONS



**Performance
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NEWS *and* VIEWS

Byron Somers, farmer and strip coal miner near Canton, Ill., feeds his pigs "delicious" bituminous coal. The pigs like it as did their mothers and fathers. Many Illinois farmers use this method of getting mineral into hog diet.



Hamilton Wright Ph.

Eastern



States

School Board Adopts Plan to Teach Mining



Adoption of plans for establishing a course in anthracite mining as a major branch of the vocational training system in Shamokin High School took place on September 15 at Shamokin, Pa.

The training course in mining will be established in conjunction with the mining industry and was authorized to start at the opening of the next school term. Coal company executives have been contacted in connection with the plan, and have offered to supply the necessary equipment for practicable instruction for high school boys electing to take the course. Mine executives pointed out that a course of high school training in the region's basic industry would be of considerable aid in providing fully qualified miners, fire bosses, engineers and superintendents, with opportunities for further advancements.

New Research Laboratory

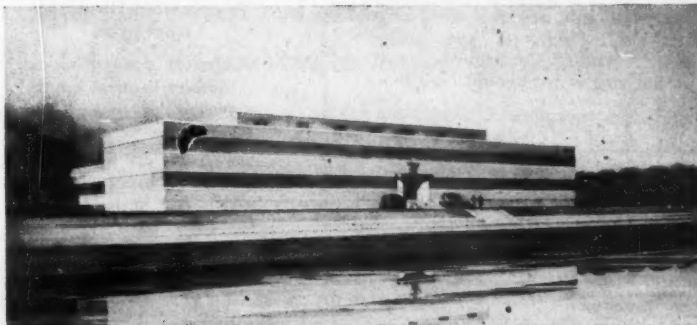
To carry industrial science deeper into the service of postwar living, the Allegheny Ludlum Steel Corporation has placed first on its peacetime expansion program the immediate erection of an ultra-modern \$2,000,000 research laboratory and experimental center at its headquarters plant, Brackenridge, Pa.

With the new facilities, an enlarged

and intensified program of fundamental and applied research will be brought to bear on the stainless, magnetic, valve, tool, and other complex steels produced by the company.

In addition, new and improved fabricating techniques will be developed, to bring increased aid to the manufacturers of appliances and equipment used in American homes, businesses and industries.

Complete air conditioning, including elimination of dust by electrostatic precipitation, will safeguard delicate scientific instruments and complex experiments. The structure is of steel frame and brick design, with double insulating glass windows. The main two-story-and-penthouse building is extended by a one-story furnace section, containing melting and make-up floors, annealing and melting furnaces, and pickling equipment, for experimental work.

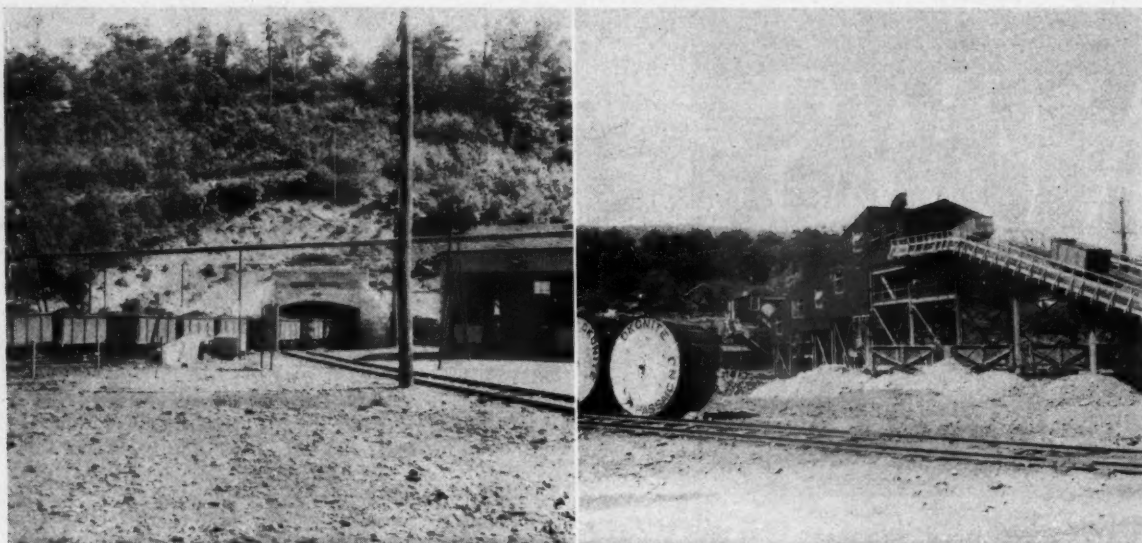


Allegheny Ludlum's research laboratory and experimental center at Brackenridge, Pa.

To Fight OPA Suit

Damage suits alleging price violations were filed in Federal court at Pittsburgh recently. Western Pennsylvania coal operators facing these suits have countered with charges that the OPA is using them as legal guinea pigs in an effort to have the Federal courts clarify the agency's own snarled rulings. Pittsburgh Coal Company and the Champion Coal Company are being sued by OPA for \$1,050,000. OPA describes Champion as a wholly-owned subsidiary of Pittsburgh Coal and says the subsidiary was set up a year ago last January as a "fictitious corporate enterprise" so that higher prices could be obtained than would otherwise be possible under regulations. It is also charged that there were irregularities in wholesale and retail transactions; that there were erroneous records that OPA men were not allowed to inspect; and that overcharges were made for delivery and other services.

J. B. Morrow, president, Pittsburgh Coal Co., has stated that he intends to fight the suit to the limit. He states that the company has repeatedly asked the OPA office to define its regulations and has received no answer. He



Mine operations have reached a well advanced stage at Philadelphia and Reading Coal and Iron Company's Newkirk Colliery at Tamaqua, Pa.

declares that if there were pricing errors, they were caused by "rulings so confusing that they were not even clear to those whose duty it was to enforce them."

Pittsburgh Coal Company cites a regulation in effect during 1944 when the violations are alleged to have occurred which said in part, "The maximum price shall be the maximum price of the most closely competitive dealer of the same class." The company says that when it attempted to apply this ruling it was told by OPA that it could not be applied because the prices of the competitor were under attack.

Consolidation Coal Company has been made the defendant by OPA in a \$355,000 action and the Greensburg-Connellsville Coal & Coke Company and the Baton Coal Company have been sued for not less than \$300,000. OPA has also announced that three more suits will be filed soon. Charles Baton, vice president of Greensburg-Connellsville and also president of the Baton Coal Company, has charged that OPA wanted the "courts" to find out what prices we should charge.

Wagner Act Amendment Needed



In an interview on the subject of the recent coal mine strike, James D. Francis, president of the Island Creek Coal Company, said:

"The present coal strike is an attempt by the United Mine Workers of America to force the direct operating personnel of the management to become members of its affiliated union, which it controls, and thus to take over the control and direction of the management of the mines. This is not by request of the supervisory management force, but it is a strong-arm attempt to force them to become mem-

bers of the union without their consent and against their will. The average run-of-the-mine workers themselves are opposed to this strike and are willing and anxious to work, but they themselves are being picketed and forced to quit work by the small minority under the absolute control of the officers of the United Mine Workers' organization. No legal protection for the men who desire to work or for the management is being furnished either by the Federal or state governments. The situation is bordering on anarchy.

"The attempts by Washington to restore the mines to work by making concessions that mean the surrender of management, planning and supervi-

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Consulting Mining Engineer

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Fredericksburg, Va.

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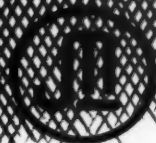
Oliver Building Pittsburgh, Pa.

DID YOU

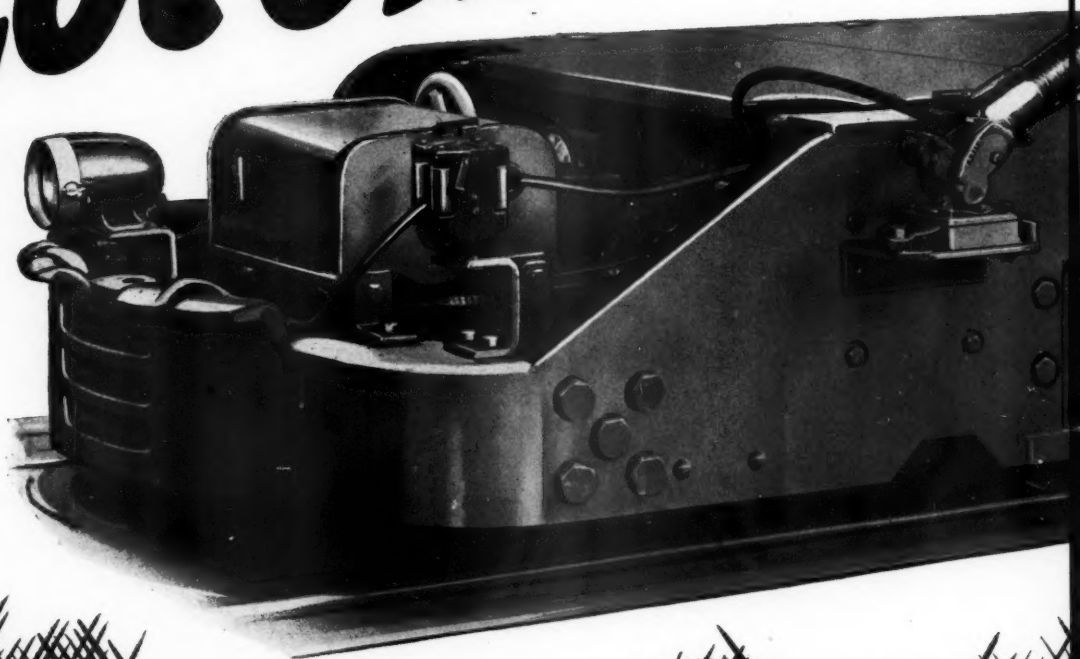
**That all of the 4½ million pounds
of sulfa drugs produced in the
United States last year came from
Coal By-products?**

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**That during the past six years two out of
every three locomotives shipped by The
Jeffrey Mfg. Co., were equipped with
Roller Bearing Motor Axle Suspension
...a construction pioneered by Jeffrey?**



JEFFREY *Gathering* **LOCOMOTIVE**



JEFFREY Locomotives

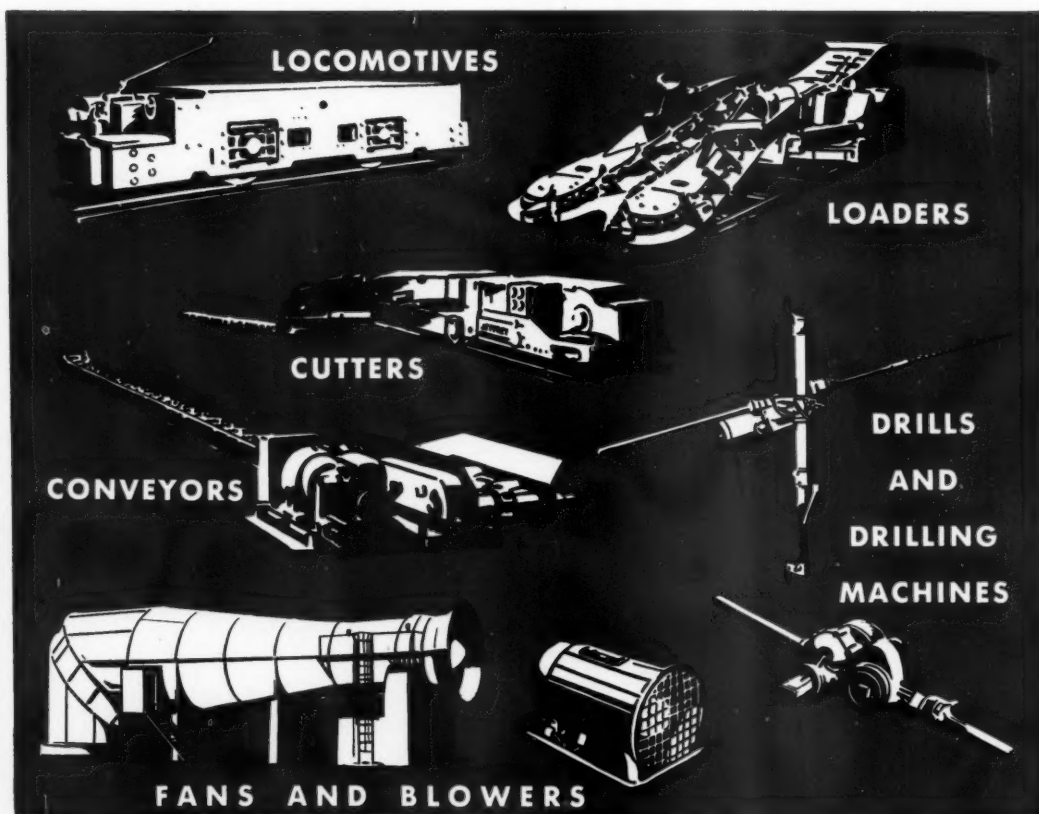


JEFFREY builds a complete line of trolley, cable reel and storage battery type locomotives to meet specific gathering needs and conditions. Locomotive pictured here is equipped with roller bearing motor axle suspension and roller bearing journal boxes. Where desired, bronze bearings can be furnished. Jeffrey also builds a complete line of main-line haulage locomotives in single and tandem units.

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British Jeffrey-Diamond, Ltd.
Wakefield, England

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Johannesburg, S. A.

sion to the workers, would be the end of the right to own and manage property.

"The only way this matter can be cleared up with any chance of returning to lawful operation of properties is for Congress to amend the Wagner Act and similar legislation to provide for a restoration of law and order in America. It should clarify the Wagner Act to provide clearly, as it intended in the beginning, that management employees are not subject to the collective bargaining provisions of the Wagner Act, and it must make the unions again subject to the laws of the land and responsible for their civil and criminal acts. Most of the exemptions from law granted to labor unions have been by Government bureaus and Federal courts, misinterpreting acts of Congress, but this can only be corrected by affirmative and positive action by Congress.

"The coal industry is trying to maintain what it considers its legal rights as owner and manager of properties and its individual freedom. In doing so it is acting for the benefit of every citizen of America, but cannot be successful unless the citizens of America generally insist upon their Congressmen taking affirmative action to correct this situation, not only in the interest of the coal industry and all other employers of labor, but in the interest of every employe and every citizen of the United States."

Predicts High Anthracite Demand

An exhaustive study and forecast of demand for anthracite through the year 1950 indicates a high overall demand for this and other home-heating fuels, "possibly surpassing the previous wartime peak demands," Frank W. Earnest, Jr., president of The Anthracite Industries, Inc., stated recently.

Addressing a "Victory Conference" of the Fuel Merchants Association of New Jersey, Earnest said it was "entirely probable that the total production of anthracite will be in demand in the next five years."

"The largest single factor affecting tonnage of retail dealers or producers," he said, "lies not in competition but in national income or prosperity and the tonnage of anthracite has been affected more in any year by this national income curve than all the loss or gains from competition."

He contrasted the tonnage drop during the pre-war depression years, when "doubling up" of families resulted in vacant homes and lower incomes caused lower fuel consumption in occupied homes, with the quick rise in home occupancy during the war which, with other war causes, brought about "the largest domestic heating

A M C Resumes Coal Conventions

Meeting to Be Held at Cincinnati, April 29-30, 1946

THE twenty-second Annual Coal Convention of the American Mining Congress will convene at Cincinnati, Ohio, on April 29, with George L. Smith, vice president, Rochester & Pittsburgh Coal Co., as National Chairman of the Program Committee. Resumption of the machinery exhibits has been postponed until the '47 meeting, as another year will be required to enable the equipment companies to convert to peacetime schedules and produce the new models, many of which have been on the drawing boards since Pearl Harbor.

Manufacturers will give every assistance in carrying out the convention plans as the Program Committee will call on all branches of the industry—bituminous and anthracite, deep mining and strip mining, operators and manufacturers—for papers and discussions on coal's readjustment problems. The Program Committee, listed below, is now engaged in planning the details of the meeting and their announcement of subjects, authors, sessions, and convention days will be made in the near future.

H. V. BROWN, President, The Brown-Fayro Co.
E. J. BURNELL, Vice President, Link-Belt Co.
CHAS. W. CONNOR, Vice President, American Rolling Mill Co.
D. H. DEVONALD, Mining Engineer, Peabody Coal Co.
H. G. DILLON, Manager, Westinghouse Electric Corp.
HARRISON EITELJORG, General Manager, Morgan Coal Co.
JOHN J. FOSTER, Assistant to Vice President, Island Creek Coal Co.
J. H. FULFORD, Manager Mining Equipment Sales, Jeffrey Mfg. Co.
WM. E. GOODMAN, President, Goodman Mfg. Co.
EDWARD GRIFFITH, Vice President, Glen Alden Coal Co.
P. H. HASKELL, JR., Vice President, Alabama By-Products Corp.
C. P. HEINER, Vice President, Utah Fuel Co.
MERL C. KELCE, General Superintendent, Sinclair Coal Co.



GEORGE L. SMITH
National Chairman

A. S. KNOIZEN, Vice President, Joy Manufacturing Co.
H. L. KONNERTH, Assistant to President, H. C. Frick Coke Co.
CHAS. W. LAWALL, Engineer of Coal Properties, Chesapeake & Ohio Railway Co.
A. R. MATHEWS, Vice President, Clinchfield Coal Corp.
D. L. McELROY, Chief Engineer, Consolidated Coal Co.
L. C. MOSLEY, Manager, Mining Division, Marion Steam Shovel Co.
FRANK E. MUELLER, President, Roberts & Schaefer Co.
R. G. PFAHLER, Chief Engineer, Berwind-White Coal Mining Co.
J. T. RYAN, JR., Vice President, Mine Safety Appliances Co.
DAVIS READ, General Superintendent, West Kentucky Coal Co.
HENRY C. ROSE, Production Manager, Pittsburgh Coal Co.
R. H. SWALLOW, Chief Engineer, Ayrshire Collieries Corp.
W. P. TAMS, President, Gulf Smokeless Coal Co.
T. J. THOMAS, President, Valier Coal Co.
R. E. WILEY, General Manager, Explosives Department, American Cyanamid Co.
J. W. WOOMER, Consulting Engineer, Wheeling, W. Va.

load that retail dealers ever experienced in this nation."

If authoritative predictions of a long period of national prosperity are borne out, Earnest asserted, and this is accompanied by a large home-building program, the next several years should see "a high overall demand for home heating fuels, possibly surpassing the previous wartime peak demands."

"This assures that the total retail fuel business in practically all communities will be larger," he said.

Meanwhile, he added, the anthracite industry and the individual producing companies are going forward with "the largest research program in the history of the industry," as well as accelerated merchandising, advertising and public relations programs.

Coal Use Advisory Board

A six-man advisory committee has been appointed by the executive committee of the Bituminous Coal Institute to assist the Institute in its campaign to keep coal as the nation's leading fuel, it has been announced by Harry M. Vawter, director of the Institute.

Mr. Vawter and the advisory com-

mittee are mapping out plans which will put the Institute in a position whereby it can render positive assistance to the retail coal merchant's associations throughout the country. A meeting of Mr. Vawter, the advisory committee, and the American Retail Coal Association will be held at an early date. The members of the new committee are: Barton R. Gebhart, chairman, vice president, Chicago, Wilmington and Franklin Coal Co.; H. A. Glover, vice president, Island Creek Coal Co.; Harold Wright, vice president, Republic Coal & Coke; M. L. Patton, vice president, Truax-Traer Coal Co.; A. H. Collins, vice president, Pocohontas Fuel Co.; and Merle Crump, advertising manager, Hume-Sinclair Coal Co.

Reemployment of Veterans

Nearly 13,000 veterans of World War II had been employed by subsidiary companies of United States Steel Corporation up to August 31, and the figure is increasing daily.

Of the number employed 8,907 were former employees, and 3,963 were veterans not previously employed by the companies. More than 110,000 em-

ployes of United States Steel Corporation subsidiaries left their jobs during the war to enter the armed services.

Many of the veterans given postwar jobs wear the Purple Heart and have physical handicaps which render them incapable of performing their former work. Subsidiary companies were prepared for this situation, however, through a comprehensive job survey. Each of the thousands of jobs in the numerous plants had been classified for quick determination of whether a job could be performed by a handicapped veteran. In this manner many returning servicemen were fitted into new jobs which they were capable of handling despite handicaps.

Carnegie-Illinois Steel Corporation, largest subsidiary of United States Steel, sent to its 44,000 employees in the armed services a questionnaire for the purpose of determining their plans for returning to their former jobs, and what new skills they may have learned as a result of Army training. Of 7,000 Carnegie-Illinois employees in service who have replied to this questionnaire, 6,160, or 88 per cent, have indicated that they plan to return to their former jobs, 9.6 per cent are undecided, and 103 plan to enter college under the GI Bill of Rights.

To Ship Coal to Europe



The coal mines of the Birmingham District have been called upon to furnish 450,000 tons of coal for export to Belgium, Holland, Norway and France. This tonnage is being sent to help relieve the coal shortage there, and alleviate the suffering which might otherwise take place this winter. Shipments will be made monthly and medium grade coal will be sent. The Alabama State docks, at Mobile, will handle part of the shipments, while Charleston, S. C., and Pensacola, Fla., will get the remainder.

To Operate Timber Tract

In Baldwin County, which borders on the Gulf, in the southern part of the state, is a 50,000 acre tract of virgin pine timber, said to be one of the finest in America. This is owned by the Tennessee Coal, Iron & R. R. Co., which has recently concluded an agreement with a lumber manufacturing concern to take charge of the tract and manufacture and market the timber. The contract calls for approved conservation methods in handling, with the view of perpetuating the timber reserve. A model plant for manufacturing the lumber will be installed, and a large part of the product will be used by the Tennessee Company and its subsidiaries.



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with CANTON MINE CAR TRANSFERS

2 MINUTES

To install it on track
To remove it from track

20 SECONDS time for a car change

Moderately priced. Write for catalogue

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DEPENDABILITY PROVED in a greater variety of applications than any other diesel

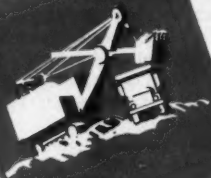
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In heavy-duty trucks,
both on-the-highway
and off-the-highway.



Proved

In all types of heavy-duty earth moving, road building and material handling equipment for contractors and aggregates producers.



Proved

In every kind of mining power application... both above ground and below... stripping, loading, hauling, stationary and marine.



Proved

In tugs, ferry boats, commercial fishing boats, fire boats, as well as pleasure craft... for both propulsion and auxiliary service.



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In yarders, loaders, trucks, tugs and sawmills... in all classes of portable and stationary service... on the show and in the mill.



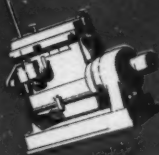
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In locomotives, motor trains, maintenance-of-way and other types of equipment operated by the nation's railroads.



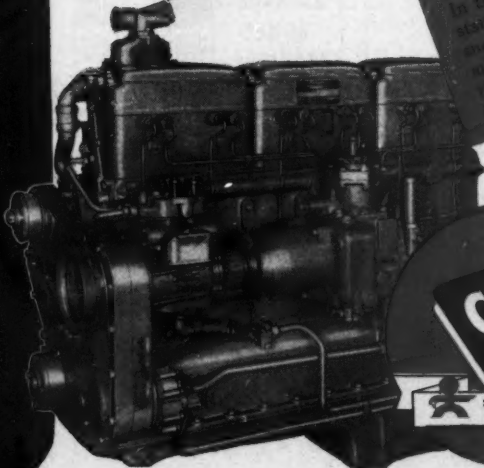
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In the widest range of stationary applications, such as flour and feed mills, ice and refrigeration plants, dairies, cotton gins and many more.

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1. More than 90% of the long-line, franchise-operated, heavy-duty, diesel-driven trucks in the 11 Western States are Cummins Diesel-powered.
2. In the world's largest petroleum producing region—the Mid-Continent Area—Cummins Diesels power more rigs than any other diesel engine.
3. More yarders, loaders and trucks in the Northwest Woods are powered by Cummins Diesels than by any other single make of diesel engine.
4. On the Mesabi Iron Range—largest in the world—most of the rubber-tired earth and ore moving equipment is Cummins Diesel-powered.

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Columbus, Indiana

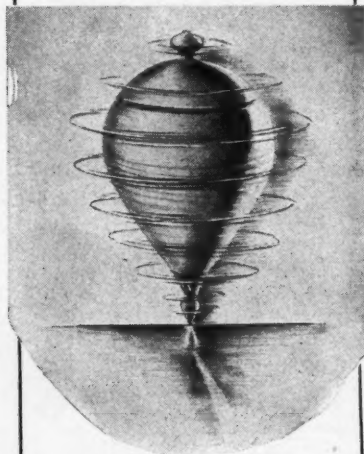


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"C.M.I." CONTINUOUS CENTRIFUGAL

This dryer reduces the moisture content of the finer coal sizes to a point where there is no clogging of spouts, cars, bins, etc., also no freezing in transit or storage.



At many plants this machine is also reclaiming sludge and slurry coal and making a product that is sold for use in powdered coal plants, on chain grate stokers or blended back with some of the larger sizes. Much good carbon that had previously been thrown away is now made into a saleable product.

**CENTRIFUGAL AND
MECHANICAL
INDUSTRIES**
INC.

3500 SOUTH SECOND STREET
ST. LOUIS 18, MO.

Wheels of Government

(Continued from page 52)

Gwynne Bill—Limit Claims

The much-needed Gwynne bill, H. R. 2788, has been reported by the House Committee on Judiciary and is now subject to House floor consideration under a two-hour open rule. The measure limits to one year the time in which private suits can be initiated under Federal law, and particularly under the Wage-Hour law in suits for back pay, overtime and "liquidated damages." In its present form the measure would require that any cause of action accruing prior to its enactment, and which had not already been barred by any applicable statute of limitations, must be commenced within six months after enactment. The bill would further protect persons who had in good faith relied upon any regulation, or administrative practice, notwithstanding that such regulation or practice may have been later amended or rescinded or declared to be of no legal effect, either by the administrative body or by the court.

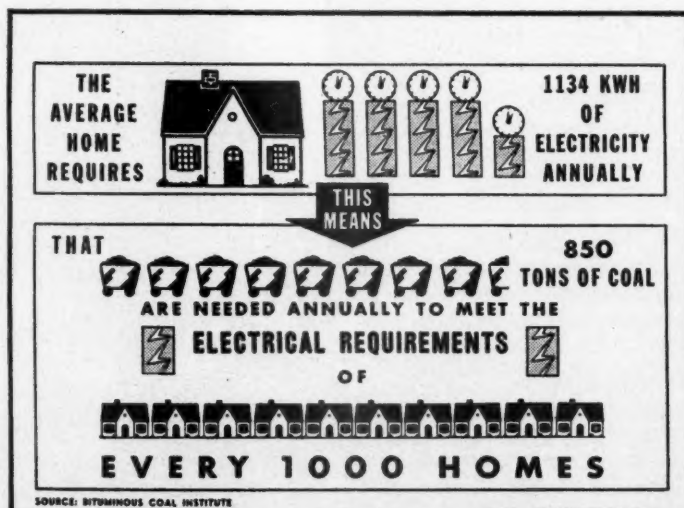
The committee report which accompanies the bill calls attention to the fact that for many years coal miners and operators agreed that "travel time" was not work time and that wages were adjusted on that basis. The document reads, "In fact, it was the subject of collective bargaining agreements between the operators and the union. In accordance with this understanding, the Wage and Hour Administrator ruled that such travel time was not work time under the Act. Thereafter in the case of Jewell Ridge Coal Company v. Local No. 6167, United Mine Workers (322 U. S.

756), the Supreme Court of the United States held that, notwithstanding the collective bargaining agreement, travel time was work time. This decision had the practical effect of creating new and unforeseen contingent liabilities which both parties had deliberately intended to avoid."

Silver Legislation

In mid-October Senator Pat McCarran of Nevada introduced a bill granting the price of \$1.29 per ounce to domestic producers of silver. The Senator insists that instead of receiving the present price of 71.11 cents the producer should receive the full monetary value of \$1.29—that under the first Coinage Act passed by Congress (approved April 2, 1792, and still in effect) an ounce of silver is and has been "ever since the inception of our Government worth \$1.29 as money of the United States." McCarran's bill would further repeal the silver transfer tax of 50 per cent on all profits arising from private transactions in silver.

At the time the Senate passed the Revenue Bill on October 24, it was believed that Senator McCarran would offer his silver bill as a rider. He did not attempt this action but introduced another bill calling simply for payment by the Treasury of \$1.29 per ounce to domestic producers. This bill has been referred to the Committee on Banking and Currency, which likewise has jurisdiction over a bill recently introduced by Senator Green of Rhode Island, which would extend for two years the Green Act of 1943 (expiring December 31, 1945). Senator Green's new bill permits purchase of Treasury silver by manufacturers at a price of not less than 71.11 cents per ounce.



Central



States

Sahara Coal Company's Scholarships



The Sahara Coal Company of Chicago has established a scholarship fund to be known as the "Sahara Coal Company Scholarship"

which has been formally accepted by the University of Illinois, Urbana. There are nine scholarships, four for undergraduates for four years; four for master degrees with a one-year course; and one for a three-year doctor's degree. Awards are to be made under recommendations of the Department of Mining and Metallurgical Engineering. When more applications are made than the number of scholarships available, all other things being equal, the scholarship committee will give preferential consideration to applicants in Saline County, Ill., where the Sahara mines are located and further to applicants whose fathers are now or were formerly employed by the Sahara Coal Company.

Chairman Henry C. Wood in announcing the awards on behalf of the company, stated: "Never in the history of our nation has there been a greater demand for scientifically trained men than there is today, and particularly during the war years have we been woefully negligent in providing for the future. For example, after the war we shall need 35,000 more doctors than will be available, and the dearth of other specially trained men is almost in proportion. In a survey of 116 universities and colleges, placement officers reported that from three to ten positions await every available graduate.

"In a recent report, Dr. Gustav Egloff, noted scientist, asserted that through sending technical students into war service the United States has lost 150,000 potential scientists in the past three years and indications are that another 100,000 will be lost in the next two years.

"The atomic bomb was developed through a backlog of United States scientists trained before the war, but unless steps are taken at once to return men to school, we will likely not have this backlog for future crises.

"During the past 25 years, coal has made phenomenal progress in the world of science. Nylon, the sulfa drugs and innumerable other history-making discoveries have been made by scientists using coal as their basic ingredient. To help develop further and as yet perhaps undreamed uses for

coal, as well as to produce the maximum of efficient heat and power with coal, these Sahara scholarships have been established."

Solar Buys Schuyler Coal Company

W. H. Moseley, president of the Schuyler Coal Company, which, for the last four years has operated a strip mine north of Rushville, Ill., recently announced that he had sold the company and that it will be operated hereafter as the Solar Mining Co. Officers of the Solar Mining Company are: President, Frank S. Kolbe; vice president in charge of operations, H. A. Reed; secretary-treasurer, A. E. Lamm. The coal will be sold by the United Electric Coal Companies of Chicago. Mr. Moseley states that he has disposed of his business because of ill health.

Illinois Meeting Well Attended

The fifty-third annual meeting of the Illinois Mining Institute took place in the Abraham Lincoln Hotel at Springfield, October 26. The meeting was called to order by President George F. Campbell and the election of officers was announced.

New officers for 1946 are as follows: President, Joseph E. Hitt, Walter Bledsoe Co., St. Louis, Mo.; vice president, Robert M. Medill, director, Dept. of Mines & Minerals, Springfield, Ill.; secretary-treasurer, B. E. Schonthal, Chicago, Ill. New members on the Board of Directors, elected for three-year term: R. L. Adams, Old Ben Coal Corp., West Frankfort, Ill.; Alex Duncan, Superior Coal Co., Gillespie, Ill.; G. S. Jenkins, Consolidated Coal Co., St. Louis, Mo.; and E. R. Keeler, Franklin County Coal Corp., Chicago, Ill. Hold-overs on the Board of Directors from previous year or years, now continuing their three-year terms: Paul Halbersleben, Sahara Coal Co., Harrisburg, Ill.; L. F. Lumaghi, Jr., Lumaghi Coal Co., St. Louis, Mo.; Harry M. Moses, H. C. Frick Coal Co., Pittsburgh, Pa.; H. A. Reid, United Electric Coal Companies, Chicago, Ill.; J. W. Starks, Peabody Coal Co., Taylorville, Ill.; E. F. Stevens, Binkley Mining Co., St. Louis, Mo.; H. A. Treadwell, Chicago, Wilmington & Franklin Coal Co., Chicago, Ill.; and W. P. Young, Bell & Zoller Coal & Mining Co., Chicago, Ill.

The morning technical session was

presided over by T. J. Thomas and two papers presented: "Safety and Mining," by Robert Weir, assistant director, Dept. of Mines & Minerals, Springfield, Ill.; "Explosives in Coal Mining," by N. G. Johnson, Technical Service Section, E. I. du Pont de Nemours & Co., Wilmington, Del.

The afternoon session was conducted by Howard Lewis, assistant general superintendent, Old Ben Coal Corporation. The following interesting papers were presented: "Coal Mine Lubrication," by Arthur M. Hughes, Superior Coal Co., Gillespie, Ill., with special discussion by L. G. Hazen, Socony-Vacuum Oil Co., Pinckneyville, Ill.; "Evolution of Coal Cutting Machinery," by Rod Eagan, Goodman Mfg. Co., Chicago, Ill.; "Mining Electrical Group Begins Its Ninth Year," by Fred W. Richart, *Coal Age*, Carterville, Ill., with special discussion by Thomas L. Garwood, Chicago, Wilmington & Franklin Coal Co., West Frankfort, Ill., and Frank Eubanks, Old Ben Coal Corp., West Frankfort, Ill.

Toastmaster for the evening session was Richard F. Wood, executive vice president, Belleville Fuels, Inc., St. Louis, Mo. The special guest speaker was Holly Stover, president, Chicago & Eastern Illinois Railroad. The conference was well attended throughout.

Foley Mine Being Re-opened



A new shaft is being sunk on the north end of the Foley lease north of Picher in Kansas by the Eagle-Picher Mining & Smelting Company. The company has been conducting an extensive drilling campaign here during the last several months. The shaft, which is located about 700 ft. north of the old Foley mill shaft, will be sunk to a depth of 455 ft., according to a report by S. S. Clarke, of Baxter Springs, who is general mine superintendent. A 12-in. drill hole is being put down about 8 ft. south of the shaft for installation of a pump which will handle the water encountered during the sinking operations. A sinking derrick and trans-

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former house have been set up at the new shaft site and an airline has been extended from the West Side mine. The old Foley mill shaft is being mucked out by an "orange-peel" bucket and has now been repaired to the 200-ft. level. It is 286 ft. deep. This shaft will be continued down below the 400-ft. level according to reports. The derrick has already been built and other mining equipment will be installed as development progresses. This new development at the Foley and the drilling being done in the vicinity, represent extension of the great Picher field northward with the same ore formation and horizon at lower depths.

Little Pat Has Second Bonanza

A second shallow bonanza has been opened by the Little Pat Mining Company near the initial one of a year ago on the Missouri Zinc and Lead Company's land near 22nd and Wisconsin Avenue, Joplin. A drill hole, put down about 50 ft. south of the first shaft, disclosed a run of lead ore averaging about 10 per cent of recovery value on the 42 to 47 levels with nearly 40 per cent in blende recovery values from the 52 to 58-ft. levels, according to reports. A new shaft was sunk about 25 ft. west of the drill hole which struck ore at the 40-ft. level and continued down to the 70-ft. level. Charles Roberts, a veteran soft ground miner, was responsible for timbering the ground and driving the drift toward the drill hole on the 65-ft. level. At last reports, this heading was 8 ft. wide and about 15 ft. high. Ore from this operation is dumped on surface and is thought to be rich enough to go nearly as high in recovery of blende as did the first milling ore from the initial shaft, which resulted in a recovery of approximately 37.5 per cent high grade blende. The ore will be milled over the custom mill of the St. Louis Mining & Milling Company, northwest of Joplin.

Corrections October Mining Congress Journal

Page 17, first column, lines 12 and 13 should read . . . (1) Repeal the 95 per cent excess profits tax on corporations. . . .

Page 77, second column, change the first word in the third paragraph to read: Rehabilitation.



Ten-Year Labor Controversy Settled

THE end came recently to one of the nation's most litigated labor cases when the CIO and the National Labor Relations Board accepted \$250,000 in final settlement of their 10-year fight against the Eagle-Picher mining companies, largest operators in the Tri-State lead and zinc field.

In an agreement filed in the United States Circuit Court of Appeals at St. Louis by both sides, the union and Government agency abandoned the long contest born with the Wagner Act to collect more than \$1,000,000 in back pay for 209 miners who struck in 1935. The stipulation also dismissed all charges of unfair labor practices against the companies.

The Eagle-Picher case parallels in duration that of the Donnelly Garment Company's fight against the International Ladies Garment Workers Union. Its inception was a violent one in the Missouri-Kansas-Oklahoma mine district. The Governors of Oklahoma and Kansas called out the National Guard units to quell riots at the mines in the summer of 1935. The mines were reopened under patrols.

Although many of the strikers got jobs back under the NLRB order, the CIO union does not represent the workers for the companies for collective bargaining. The NLRB conceded that the union members were a minority of the employees.

The case was one of the first brought under the NLRB Act which became effective July 5, 1935.

When the strike was called by the International Union of Mine, Mill and Smelter Workers there was no dispute as to wages, hours or working conditions. The subsequent violence between members of the CIO union and members of the "Blue Card" union, alleged by the CIO to be company dominated but which later affiliated with the AFL, was climaxed by a gun battle the afternoon of April 11, 1937, when nine men were shot, one fatally. The union claimed a membership at the time of the strike start of 3,500 to 4,000 of the 6,000 workers in the district. The total vote in the strike, according to NLRB numbered 7,000.

More than 300 members of the CIO union persisted in the strike and the NLRB in 1935 initiated proceedings on their behalf against the Eagle-Picher Lead Company and the Eagle-Picher Mining and Smelting Company. The trial was begun before a board examiner at Joplin, Mo., December 6, 1937, and continued to April 29, 1938. A congressional committee inquired into the operations of the hearing later and returned a report of alleged irregularities.

The NLRB found against the company in an order issued October 27, 1939, ordered the jobs of the strikers restored and that they be paid back

wages. The companies appealed the order to the Eighth Circuit Court of Appeals. A decree of enforcement of the NLRB order was issued by the court June 27, 1941. The order contained the board's formula for computing back pay.

Alleging that a "mistake" had been made in its devising of the formula in that it would yield only about \$200,000 instead of \$800,000 for the strikers, the board filed a petition with the court February 4, 1943, to vacate the decree as to the back-pay award. The court denied the petition and the union appealed to the United States Supreme Court. There the opinion of the lower appellate court was upheld May 28 by a 5 to 4 decision and the agreement for the \$250,000 settlement followed.

In its opinion, the Supreme Court had this to say of the NLRB petition to change its back-pay formula:

"what the Board (NLRB) complains of is that it is not permitted to exercise its admittedly wide discretion a second time, or any number of times it may choose.

"Administrative flexibility and judicial certainty are not contradictory; there must be an end to disputes which arise between administrative bodies and those over whom they have jurisdiction. * * * Discussion of the Board's peculiar administrative ability serves no end where the matter is one of simple mistake. It rings hollow when it refers to what, on the whole, is little more than a mistake in arithmetic and, in one instance, is just that."

August 30, 1941, the company complied with the board's order by sending invitations to approximately 200 workers to return to their jobs which they had left six years before. The board claim was that the back-wage award should total about \$800,000 plus interest at 6 per cent a year, a total of more than a million dollars. When the formula was applied, it yielded only \$200,000 and the company insisted the decree was final. The \$250,000 settlement is without interest. The company also agreed to pay court costs of the union up to \$1,500.

It was stated that a check for \$250,000 was being delivered to the Treasurer of the United States for disbursement to the union and their attorneys by the NLRB. Lawyers for the union in the fight were Sylvan Bruner, Pittsburgh, Kans.; and Louis N. Wolf, Joplin, Mo. Attorneys for the company, Harry W. Blair, of Washington; A. C. Wallace, of Miami, Okla.; and John G. Madden, of Kansas City, Mo., issued this statement in behalf of their clients:

"Representatives of the Eagle-Picher Company and Eagle-Picher

Mining & Smelting Company said today that this settlement marked the end of ten years of litigation. Under it, the two companies are paying \$250,000 instead of the million dollars or more demanded by the board and union as back wages. This was the necessary result of the opinion last May of the United States Supreme Court rejecting the demand of the board and union. The settlement includes an acknowledgment by the board of full compliance by the companies with the enforcement decree of 1941. The case is over."

Coal Research Must Continue

If the bituminous coal industry is to maintain its enviable reputation for having achieved a "miracle of production during World War II" and obtain reasonable remuneration in the form of retained as well as expanded markets, according to T. A. Day, special representative of Bituminous Coal Research, Inc., it must "carry on" an expanded research program to "make bituminous coal a better fuel" that will provide "automatic heat as attractive and as economical" as provided by competitive fuels.

Speaking in Chicago recently before a regional meeting of the National Fuel Credit Association, Day pointed out that bituminous coal is the "most important source of fuel for power, heat and light, insofar as known fuel reserves are concerned," and should have a greater share of the fuel market.

Laboratory work for Bituminous Coal Research, Inc., Day reported, is now under way at Battelle Memorial Institute, Columbus, O.; Carnegie Institute of Technology, Pittsburgh; and West Virginia University, Morgantown, W. Va. He added that the BCR Locomotive Development Committee also has initiated investigations at Johns Hopkins University, Institute of Gas Technology and Battelle.

Projects in the general program of BCR, which Day said should be continued, include research on residential heating, smoke prevention, industrial and steam uses of coal, industrial non-steam and special uses; coal, combustion and ash; carbonization, gasifi-

cation; preparation, transportation and handling; railroad fuel and locomotive development; chemicals from coal; mining problems; and technical service.

"It has been said that those industries which have consistently invested the most in research are the most successful. If the bituminous coal industry wants to maintain its present reputation and receive its just remuneration it must invest in research.

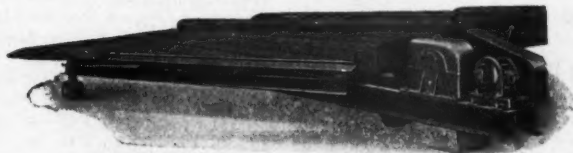
"The present BCR program deserves the wholehearted support of the entire bituminous coal industry."

To Study Water-Gas Generator



Research engineers at Battelle Memorial Institute, Columbus, Ohio, under the sponsorship of the American Gas Association, have set out to determine what goes on in a water-gas generator. Gas has been made from steam and coal or coke by the water-gas process for more than 60 years and the exact method by which the gas is formed has been a matter for discussion and speculation. Ralph Sherman, supervisor of fuels

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research at Battelle, explains that a greatly increased demand for manufactured gas for residential heating is expected after the war. The gas industry faces a great expansion in production to meet this demand. Because of the full capacity being needed but a few days of the year, however, processes and plants of large output and low capital cost are required. It is believed that a complete knowledge of the mechanism of a water-gas reaction may permit changes in design or operation that will obtain gas at a lower cost from the highly reliable water-gas set.

It is thought that easy availability of cheap oxygen in the post-war period may make it economical to mix oxygen with steam to produce more gas without necessitating increase in the size of the generator. Gasification under high pressures should make it possible to reduce the size and cost of gas-making equipment. The effect of such modifications on the mechanism of the combination of carbon and steam will be investigated.

Electronic Intercom System Helps Coal Tugboats Conquer River Fog

Fog has always been the worst enemy of steamboat men, and is a particularly serious problem on the Ohio River, with its constantly changing course and its many locks.

Small river tug boats, their paddle

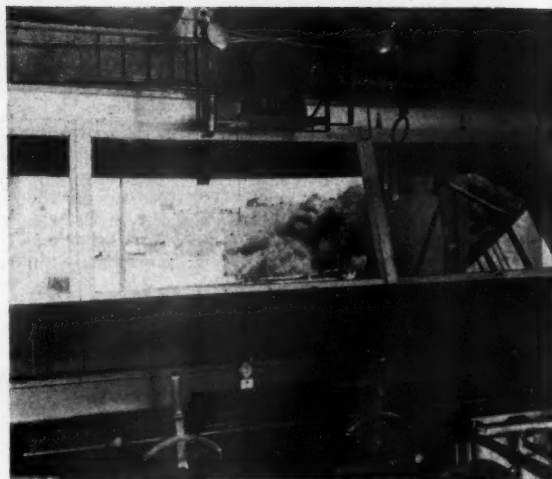
wheels churning, push barge loads of coal large enough to swamp an ocean-going freighter. Often, the line of barges extends 1,000 ft. in front of the tug boat. Obviously controlling 10,000 tons of coal in four acres of barge calls for a lot of skill under ideal conditions. When fog blankets the river, as it often does, the job of the pilot is a trying one indeed. He cannot see the lookout on the front of the tow, 1,000 or more ft. away; the use of a megaphone is impossible because of the river noises, fog-horns, sirens, etc.; and the searchlight, reflecting back against the fog, only makes things worse.

Such was the problem of Capt. Chas. Simms of the *Catherine Davis*, of the Island Creek Fuel Co., on the run between Huntington, W. Va., and Cincinnati, Ohio. Built to handle four to six barges, this small boat now pushes 10 to 12 barges.

To get such a number of barges through the locks, it is necessary to break up the fleet at each lock and to take it through in two sections. Since there are nine locks between Huntington and Cincinnati, this is a slow job at best. Many nights these fleets of barges have had to tie up on the river bank until the sun lifted the fog the next morning.

Believing that instantaneous amplified-voice communication between lookout, captain's cabin, pilot house and engine room would solve their problem, the company installed an electronic intercom system.

A master station was installed in the pilot house, with substations both in the captain's cabin and in the en-



Lookout's warnings are received in the pilot house



Lookout guides barge pilot by remote control

gine room. A third portable substation was attached and so arranged that it could be carried over the barges and placed forward.

It is no longer necessary to tie up for any except the worst fogs. How much this means is hard to estimate, but here is illustrated how electronic intercom equipment has helped to make river transportation safer and faster.

Here's the Famous W-P-A Sit-Down SHOVEL—



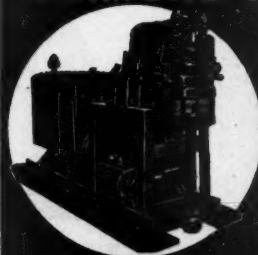
As a gag—during the W-P-A shovel-leaning days—we made the only shovel that might relieve the strenuous effort required for leaning. It could be sat on, slept on and even used for work. A later deluxe model was equipped with a radio to permit complete relaxation with music. We sold thousands of W-P-A shovels for offices and rumpus rooms. We're not making them any more but have a few in stock—to be closed out at \$4.75.

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Deep Development at Cripple Creek



The Ajax mine of the Golden Cycle Corporation, on Battle Mountain above Victor, Colo., is now shipping ore from its new deep level on the 2,600 and 2,700-ft. levels which brings mill returns of as high as \$275 a ton. Merrill E. Shoup, president of Golden Cycle Corporation, and of other Carlton companies with properties in this district, is reported to be planning to go forward with considerable development in the area as soon as manpower is available. It is said that there are only about a dozen men working in the Ajax with 200 men needed. It is believed that with a force of 200 miners, the property could earn \$100,000 a month for a long time. There are a few workers coming back from the war at this time, but the district is really awaiting the return of hard rock miners from the fighting forces.

The Carlton deep drainage tunnel was completed in 1941 at a cost of \$1,000,000 for the 32,000-ft. drive. It is planned to drive laterals from the Portland No. 2 shaft where the tunnel now ends to the Vindicator and Cresson shafts to drain them to around 3,000 ft. in depth.

It is reported that 25 new operations by lessees have recently begun in the district, but miners are still badly needed in the Cripple Creek area. Only around 100 men are at work as compared with 1,500 at operating peaks before the war.

Outlook Good at Ouray

A number of large mining interests are said to be active in the San Juan area around Ouray, Colo., and prospects are that a period of development of notable proportions will be seen there soon. The Idarado Mining Company is now developing one of the great mining properties of Colorado, the Black Bear, through its Treasury Tunnel.

Among the companies said to have representatives and engineers in the territory are the Newmont Mining Corporation, American Smelting and Refining Company, U. S. Vanadium and Anaconda Copper.

The Colorado San Juan is generally conceded to be one of the rich sections of Colorado. The territory has produced hundreds of millions of dollars in ores and the general belief is that vast possibilities are still present. It

is believed that with availability of miners about to take place, development and mining operations will bring about the greatest mining activity in local history.

Object to Tax on Metal Premiums



The Utah Copper Company plans an appeal to the U. S. Supreme Court from a decision made July 23 by the 10th Circuit Court of Appeals of Denver to the effect that Federal courts were without jurisdiction to order refund of taxes paid to the State of Utah on metal premiums. The company's attorney, C. C. Parsons, has stated that the Supreme Court will be asked to issue a writ of certiorari ruling that Federal courts have jurisdiction in the matter.

The Circuit Court has reversed the decision by the Federal District Court in Salt Lake City, restoring taxes paid under protest on metal premiums by Utah Copper Company and Silver King Coalition Mines Company. Majority opinion held the State of Utah had not permitted litigants to use Federal courts but the reversal acknowledged Utah had waived its immunity from suit in State courts. Six other Utah mining companies have filed suits in State courts for recovery of taxes paid on Federal metal premiums.

Monitor Purchases Interstate Callahan



One of the most important mining deals in the Coeur d'Alene district during the year is the purchase of the old Interstate-Callahan zinc-lead mine in the Sunset Peak district north of Wallace by the Monitor Mining Company, which is controlled by the Day mining interests.

The Interstate-Callahan was the first large zinc producer in the district and made a record for output of this metal during the first World War. The group consists of 79 patented and 4 unpatented claims. The mine has been idle for the past 20 years, except for leasing operations. The Daylight Leasing Company is now producing a large tonnage of ore from the Nipsic vein, paralleling the Callahan 2,000 ft. to the north.

The principal reason for the purchase by the Day interests is that the Monitor Company is operating a large group of zinc-lead mines in the Beaver Creek country north of and adjacent to the Sunset Peak area and can open the Interstate-Callahan veins at unexplored depth by extending the Monarch Company's lower mine workings easterly. In addition to opening the Callahan at greater depth this work would also provide a better and cheaper outlet for ores from the Beaver Creek area, which it is necessary to now transport by truck over a long mountain haul. The Interstate-Callahan opening will greatly shorten the truck transportation problem and provide a less snow-congested route during the winter months.

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J. A. Jaques, left, manager of American Diamond Drill Company, checks plans with C. L. Christensen, president, as the new company prepares to go into production of equipment for the diamond drilling industry. The new firm is located in Salt Lake City, Utah

The Interstate-Callahan mine was very productive from 1913 to 1923. During that period more than 900,000 tons of crude hand sorted smelting ore and mill feed were extracted, averaging about 2.5 oz. silver per ton, 6.4 per cent lead and 21.1 per cent zinc. From 1915 through 1920 dividends aggregating \$7,721,688.25 were paid by the Callahan Zinc-Lead Company or its corporate predecessor, the Consolidated Interstate-Callahan Mining Company. The greatest production and disbursement of dividends occurred in 1916 and 1917. The property was closed down September 30, 1923, at which time all known reserves of medium grade milling ore had been exhausted.

The Monitor Company will have to drive 1,800 ft. of drift work to connect with the Interstate-Callahan workings and this work is now under way. Besides providing an outlet for its own properties, the Monitor Company proposed to further develop the old Interstate-Callahan veins at greater depth.

Sunshine Opens "Rambo" Area

The rich Chester vein and fault system has been opened by the Sunshine Mining Company in ground owned by the Silver-Syndicate Mining Company and described as the "Rambo" area, about 2,500 ft. west of the now productive area on the 3,700-ft. level, which is the deepest level in the Sunshine mine, and is 1,000 ft. below sea level. The ore shown at this discovery point is a high grade silver-lead ore. Where the crosscut encountered the vein the ore is from 10 to 20 in. wide and occurs in a wide shear zone. Similar conditions occurred in the Chester vein where the Polaris Company first

struck the ore, which afterward developed bodies 20 ft. wide. The Sunshine Mining Company owns a one-half interest in the Silver Syndicate property. In opening this vein 2,500 ft. further east the Silver Syndicate

has taken out ore in the course of development valued at \$214,629.67, as represented by net smelter returns. The company is not in production because of the unfavorable tax laws and SEC regulations.

Anaconda Reported in "Best" Condition



The Anaconda Copper Mining Company, the world's largest copper producer, was recently reported to be in the strongest financial condition in its entire history. It paid off the last of its debt in 1942 which, in 1935, is reported to have been \$83,000,000. Capital consists of 8,674,338 common shares held by approximately 117,000 shareholders, and minority interests of \$3,900,000 in subsidiaries. The company has built up its cash in recent years and at the end of 1944, this item, including U. S. Canadian government securities, stood at nearly \$126,000,000, or more than 2½ times its liabilities.

Although copper is Anaconda's principal product, it is also an important producer and refiner of zinc, lead, gold, silver, molybdenum, manganese

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Principal Mining Areas

AIR SWITCHGEAR



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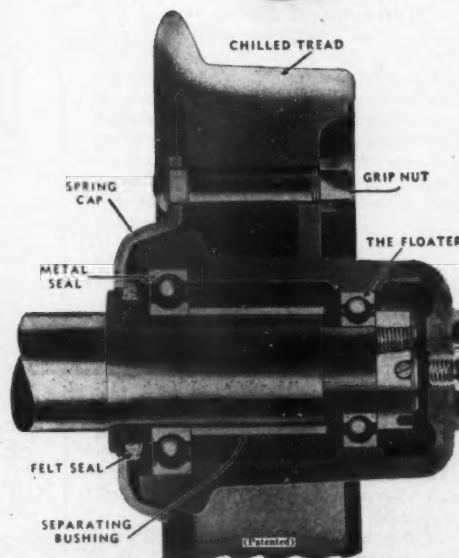


★ During these days hundreds of little leaks, little bottlenecks on the production front, have been uncovered. Finding them and eliminating them, in many cases, has resulted in tremendous savings in time, material, money and manpower. Let's consider one of these leaks in mining.

In many mines, wheels and trucks have been an orphan child, so to speak. And, with so little attention given to their vital importance, they have become little bottlenecks to production—retarding output, wasting grease, labor and power.

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Don't wait any longer to check your wheels. They may be costing you plenty.



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Sanford-Day Iron Works, KNOXVILLE, TENNESSEE

and chrome. Its domestic copper operations are centered chiefly around Butte, Mont.; but some two-thirds of its total output comes from Chile, where it operates through its wholly-owned Chile and Andes Copper Companies. The ore, however, is smelted in this country. Its Chilean mines are understood to be among the lowest cost producers of copper ore in the world. Competition with the domestic market, however, is normally prevented by a 4-cents a pound duty on imports, so that much of Chilean copper is smelted here and re-exported. Chilean reserves are estimated to have a productive life of not less than 75 years, probably much longer.

The company produces considerable portions of the country's requirements of brass and various types of copper wire through its 100 per cent-owned Anaconda Wire and Cable Company.

Lincoln Mine Operated by Atolia

The Scheelite property of Lincoln Mines, Inc., in the Tem Piute district, are reported as being operated by Atolia Mining Company of California. Considerable tungsten ore is said to be receiving concentrating treatment at the Hiko plant with a high recovery of values. The mine is in charge of Hugh W. Coke, formerly general superintendent of the Atolia tungsten operations near Randsburg, Calif. Pierce C. Walker, mining engineer and metallurgist, formerly with the Standard Cyaniding and other Nevada mining companies, is resident engineer.

Extensive core drilling of the Lincoln mines group was done last year by the United States Bureau of Mines. This disclosed important scheelite deposits containing commercial zinc on three levels below the main workings. Development work is now proceeding to open the deeper ore bodies and the mill is to be equipped with units for the separation and recovery of the zinc.

Ends Lease with Copper Canyon

Anaconda Copper Mining Company announced that the lease of properties of Copper Canyon Mining Company, in the Battle Mountain mining district, Lander County, Nevada, which was made by International Smelting & Refining Company—an Anaconda subsidiary—with Copper Canyon Mining Company will be terminated on November 30, 1945.

The lease which is being terminated was entered into August 20, 1940. Under the agreement, Anaconda was to develop and operate the mine of Copper Canyon Mining Company with an option to buy 2,000,000 shares, a majority of its stock.

Louis E. Whicher, president of Copper Canyon Mining Company, issued the following statement:

"Regarding announcement of the cancellation of Copper Canyon Mining Company's lease and option agreement with International Smelting & Refining Company, a wholly-owned subsidiary of Anaconda Copper Mining Company, this cancellation was mutually agreed upon and is eminently satisfactory to Copper Canyon Mining Company.

"Copper Canyon Company will be benefited inasmuch as it will probably cancel the greater part, if not all, of the advances due the Anaconda Company and at the same time cancel the option on 2,000,000 shares of Copper Canyon Mining Company's treasury stock."

Groom Mine Concludes Churn Drilling

Last February the International Mining Company undertook a program of churn drilling at the Groom mine in Lincoln County, Nev., to explore the deeper structural features of the property and by the end of June had put down 8 drill holes with a total footage of 2,424 ft. This drilling, however, failed to find the deep-lying ore bodies, whose presence was suggested by the structural features and geological study. It has been concluded that the

chances of finding such ore bodies do not justify further drilling and the work has been stopped. The Groom mine maintained shipments on a small scale during the first six months of the year and as much underground development and preparation for considerably increased production was carried on as labor shortages permitted. During the remainder of the year, work at the mine will be limited.

Eureka Corporation will Go Deeper at Ruby Hill

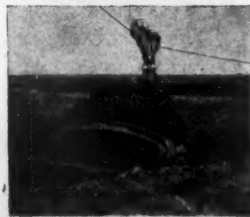
The Eureka Corporation, Ltd., a wholly-owned subsidiary of Ventures, Ltd., of Toronto, is reported to be completing installation at its 4-compartment Fad shift on the Ruby Hill property, 2 miles west of Eureka, Nev., with a view to sinking to the 2,500-ft. level. At this point, the presence of large bodies of lead-zinc-silver-gold ore has been revealed by the diamond drilling conducted by the E. J. Longyear Company. This company also has the contract to complete the shaft as well as some lateral work. New equipment now includes a complete Diesel plant, an electric hoist, a new headframe, shop, mine buildings, and camp facilities with water and sewer connections.

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Sauerman Scraper saves labor and makes full recovery of ore in underground slushing.



This large Crescent scraper with carrier is part of a Sauerman Tower Machine working on a coal stripping job. It is making a cut 300 ft. wide, 60 ft. deep and handling over 6,000 cu. yds. of overburden a day.

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Fear Loss of Salem Aluminum Plant



United States Senators from Oregon are reported to have expressed the fear that the state may lose the aluminum plant at Salem. The War Production Board has stated that this plant is no longer a war necessity and because of its ruling it is feared that there will be difficulty in obtaining labor and essential materials. Director Nigel Bell has stated that the Aluminum Division has recommended to J. A. Krug, WPB Chairman, that production at the plant be cancelled. At last reports, Mr. Bell is endeavoring to have someone sent to the plant to investigate. Production at Salem, scheduled to start on August 1, has been definitely postponed.

Sodium Metal Production at Spokane



The Union Carbide Company's subsidiary, Electro-Metallurgical Company, started production of sodium metal at the Government magnesium plant at Mead, just north of Spokane, on August 1. This plant was originally built at an estimated cost of \$20,000,000. Common salt from California is the raw material used. The output will go into the production of tetraethyl lead gasoline. For the reduction of the salt solution, a ferro-silicon process is in use. It is stated that additional material for this can be obtained at Deni-

son, north of the Mead plant. Operations are said to have begun with a working force of 140 men which will gradually be increased to 300.

Plan Aluminum Plant for Spokane

R. S. Reynolds, president of the Reynolds Metals Company, is reported to have informed Mayor Otto A. Dirkes, of Spokane, that his company hopes to put an aluminum plant in that city and that his company seeks a one-mill power rate if it is located there. The Mayor addressing the Northwest Mining Association re-

cently, predicted that the sale of the water power company will be announced before the end of the year. "We then have to face the question of whether we prefer to operate our own facilities or be dependent on some public utility district operated from a distant point."

A senatorial committee is investigating all details by which private interests will acquire the Government-owned aluminum and magnesium plants of the Northwest. Senators Hugh E. Mitchell of Washington; Harley Kilgore, of West Virginia; and Homer Ferguson, of Michigan, are on this committee.



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STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912.

OF THE MINING CONGRESS JOURNAL, published monthly at Washington, D. C., for October 1, 1945.

City of Washington, District of Columbia, ss:

Before me, a notary public in and for the state and county aforesaid, personally appeared B. C. Wilkerson, who, having been duly sworn according to law, deposes and says that she is an associate editor of THE MINING CONGRESS JOURNAL, and that the following is, to the best of her knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in Section 537, Postal Laws and Regulations printed on the reverse side of this form, to wit:

1. That the names and addresses of the publisher, editor and business manager are:

Name of publisher, The American Mining Congress, Washington, D. C.

Editor, Stanley A. Trengove, Washington, D. C.

Business manager, P. D. McMurrer, Washington, D. C.

2. That the owners are: The American Mining Congress—a corporation, not for profit. No stockholders. President, Howard I. Young, St. Louis, Mo.; Secretary, Julian D. Conover, Washington, D. C.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

B. C. WILKERSON,

Associate Editor.

Sworn to and subscribed before me this 9th day of October, 1945.

ELISE L. LEISHMAN,

Notary Public.

(My commission expires December 31, 1948.)

MANUFACTURERS FORUM

Joy Manufacturing Company Acquires La-Del Conveyor Plant

Officials of Joy Manufacturing Company on October 26 announced acquisition of La-Del Conveyor & Manufacturing Company at New Philadelphia, Ohio. The company name will eventually be changed to the La-Del Division of Joy.

La-Del makes mine ventilating fans and portable mine blowers, shaker and other mine conveyors.



A. L. Schwab

ship ventilation and other industrial uses.

La-Del thus brings to Joy added coverage of the mining field, wider diversification of product lines and markets, and some much-needed plant capacity.

Ivor Harris, president of the Ohio company, has expressed his desire to retire shortly from active business, and A. L. Schwab will continue as La-Del's general manager, becoming the chief executive of Joy's new division upon Mr. Harris' retirement.

New 2-Yd. Scraper

One of the first postwar equipment units to be released by LaPlant-Choate Manufacturing Co., Inc., of Cedar Rapids, Iowa, is a small 2-yd. front-dump scraper, Model CW-2. This scraper is the industrial counterpart of the wartime air-borne scraper which was used in large quantities by the Airborne Engineers for clearing roads and airstrips in inaccessible regions.

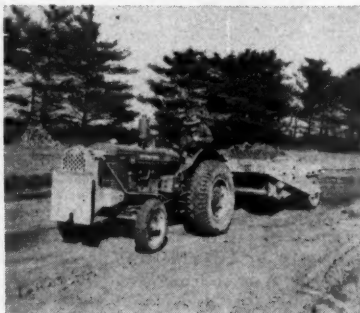
The new LaPlant-Choate Model CW-2 is said to be a sturdy yet light little scraper weighing only 2,550 lbs. The two rear wheels can be located either inside or outside the cut and it can make a full 90° turn or less within a circle diameter of 20 ft. The hitch is designed for operation behind high

La-Del also manufactures a high-pressure axial-flow fan of new design, which has potentials in dust collecting, air conditioning, refrigeration, forced draft heating,

Breaking Ground for Philco's New Factory



At Trenton, N. J., Mayor A. J. Duch took shovel controls recently to break ground for Philco Corporation's new battery factory. Left to right: C. Bradley, Pres., Local 108, UER&MWA; Duch, M. W. Heinritz, Vice Pres., in charge Storage Battery Division, Philco; Simon Belli, Pres., Karns Smith Co.; K. C. Meinken, Asst. to Pres., National Union Radio Co.



speed rubber-tired industrial tractors, such as the International Harvester Model I-4. When fully loaded, weight is lifted from the tractor's front wheels and much of the weight of the load is centered on the tractor's driving wheels for maximum traction. Bowl and apron are operated hydraulically by LaPlant-Choate's air-borne pump, the same unit used to operate the famous tank-dozer. A three-position valve enables the cutting edge to be held in position and exert effective down pressure.

Uranium Detection

The atomic bomb that leveled Hiroshima focused world attention on the rare element, uranium, and highlighted a use for Ultra Violet Products, Mineralight lamps. The V-41 Mineralight, with its short ultra-violet wave-lengths, is stated to have proved invaluable in developing a quick and accurate test for uranium.

Quoting from the U. S. Bureau of Mines Information Circular, "Fluorescent Test for Uranium": "The available methods for detecting uranium lacked one or more of the desired characteristics. Eventually, however, a method was worked out that satisfied all the requirements. This method is probably more specific and sensitive than the usual qualitative methods for uranium, and its simplicity and speed of application make it ideal for testing samples prior to quantitative analysis. . . . Since uranium is most susceptible to short-wave ultra-violet light, the lamp used in this work was Mineralight V-41 . . . which emits short-wave ultra-violet rays at 2,537 Angstrom units."

Vertical Motor

The Crocker-Wheeler Division of Joshua Hendy Iron Works, Ampere, N. J., announces a new addition to the company's line of protected-type a-c motors. The newcomer, a vertical drip proof motor which is rated at 40 C rise continuous duty with a 15 per cent service factor, is designed for operation from 60 or 50 cycle, 3 or 2



phase circuits at all standard voltages. At present a N.E.M.A. "B" flange type mounting up to and including the "284" frame, and a N.E.M.A. "C" face type mounting up to and including the "326" frame is available.

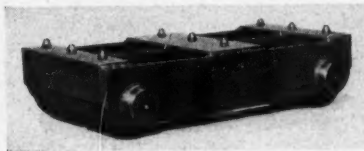
All ventilating openings of this new line of motors are shielded against the entrance of dripping liquids and fall-

ing particles. Oversize ball bearings are provided to carry thrust in addition to the rotor, and the use of the company's patented centrifugal bearing seal permits the use of softer grease for better lubrication and longer bearing life.

A new recessed junction box, which provides ample room for making electrical connections, is employed in the motor's design. The Crocker-Wheeler Alucast rotor, with bars, fans and end rings cast in one operation from aluminum alloys, is used. Other features include: heavy cast frame construction and coils protected with Vinylastic insulation.

"Skid-Rol" Dollies

Teichtmann Industries, Inc., 828 North Broadway, Milwaukee, Wis., announce the development of "Skid-Rol" Dollies, patented by Paul J. Kordes, mover of heavy machinery. Obtainable in pairs, Skid-Rols are



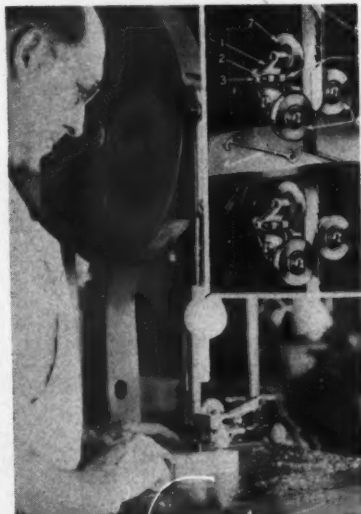
reported to be simple, low-cost dollies for shifting machines, tanks, boxes, steel blocks, dies, furnaces, heavy objects, etc.—loads from 10 to 12 tons. Sturdy steel cleats imbed into the wood skids and carry the load only a few inches from the floor with greater safety and ease, eliminating all hazards involved in handling wooden rollers. Reduces personal injury

cases to a minimum; accidents due to passing and positioning rollers are avoided.

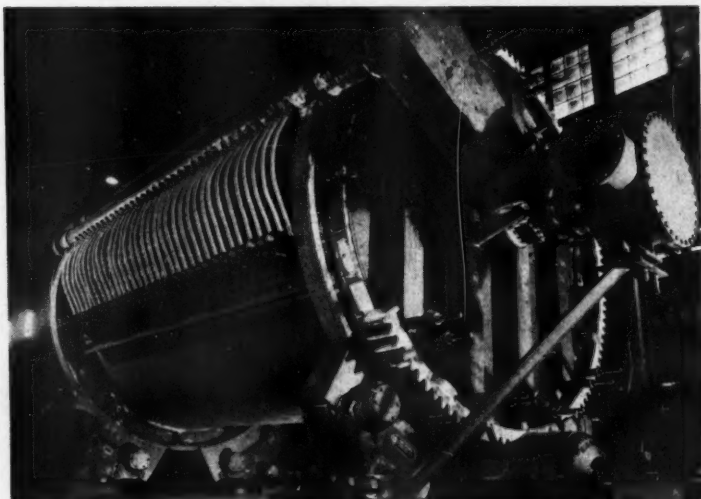
Jacking the machine or load to be moved approximately 6 in. from floor, simply position a pair of Skid-Rol Dollies parallel with each other. Locate center of gravity of load centrally over pair of Skid-Rols; then remove jacks and load will be properly balanced. Cleats of Skid-Rols imbed into wood or timber providing rigidity. Load can now, by manual power, be rolled from place to place over all types of hard floors or pavements.

New Band Saw Guide

A band saw guide and metal safety guard especially adapted to metal and plastics as well as wood and adjustable to blades $\frac{1}{4}$ -in. to $1\frac{1}{2}$ -in. wide, is announced by the Safety Division of the Boyer-Campbell Company, 6540 St. Antoine Street, Detroit 2, Mich. With side guide wheels mounted in



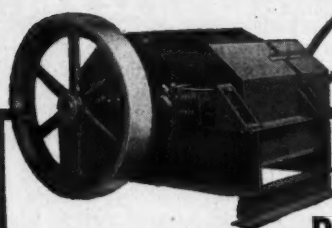
a staggered position to eliminate binding, and a grooved back wheel to hold saw in position; all equipped with double sealed, permanently lubricated ball bearings—give a smoothness of operation that produces a clean, accurate cut, reducing breakage to a minimum. Positive adjustment of mounting arm on supporting bracket is provided by a set screw that exerts pressure against a 90° pin that in turn presses against the adjusting screw. This eliminates any tendency to loosening or creeping. A special 10-in. socket wrench is provided for the set screw and adjusting screw to move grooved wheel in and out for various width saws. Minor adjustments may be made with a No. 4 wrench while saw is running. Two other models of the same design are available for the smaller sized saws.



Allis-Chalmers Photo.

Destined for a Russian smelter this new design copper converter has riding rings which permit four more tuyeres to give increased efficiency in blowing the charge. Dual arrangement for a-c and d-c power is provided

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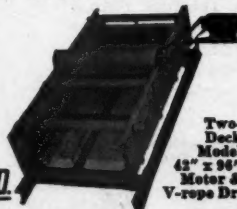
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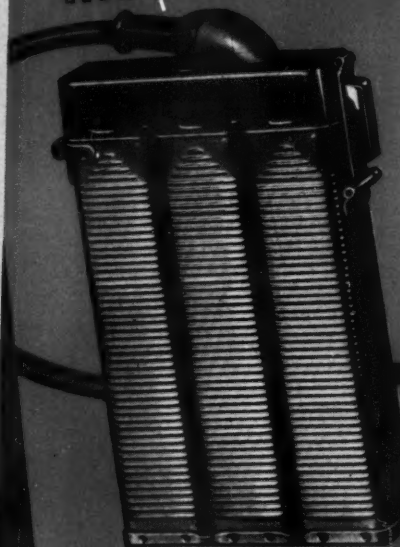
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